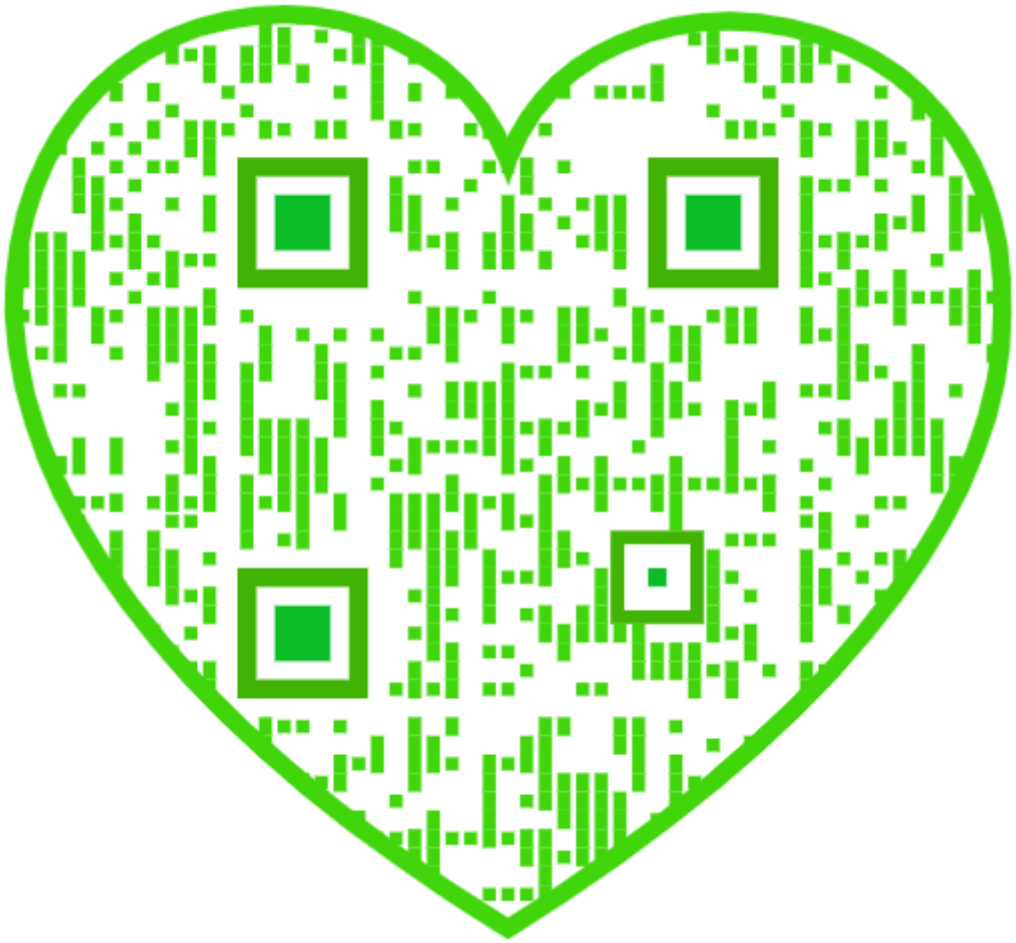

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SPECIFIC DIAGNOSIS

AND

SPECIFIC MEDICATION

BY

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TOGETHER WITH

ABSTRACTS FROM THE WRITINGS OF
JOHN M. SCUDDER, M.D.
AND OTHER LEADING AUTHORS.

THE SCUDDER BROTHERS COMPANY,
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To the Memory of

JOHN MILTON SCUDDER, M.D.,

This Work is Dedicated

by the Author.

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PREFACE.

When the writer began to prepare the pages which follow it was his intention to revise and combine in one volume the two works of the late Professor Scudder on Specific Diagnosis and Specific Medication. The great advancement which has been made during the past third of a century in the Eclectic methods of practice, however, soon made it apparent that this would be to the writer an impossible task, for it was found that much new matter would have to be added in order to bring the work up to the present needs of the medical profession. This addition could not be made and still preserve Professor Scudder's unique arrangement and forcible diction. It was, therefore, thought the wiser and more satisfactory course to prepare a new work based on the writings of Dr. Scudder and more recent authors, including the personal observations of the writer.

Individual credit has been given for much of the material used, but as it was found impossible to do so in all cases, a general acknowledgment of indebtedness to all modern Eclectic authors is hereby made.

John William Fyfe.

Saugatuck, Conn.
September 1, 1909.

INTRODUCTION.

In the early part of the nineteenth century a small body of the more advanced thinkers in the medical profession, through the influence and leadership of Dr. Wooster Beach, began to realize the extreme harshness—if not brutality—of the methods then employed in the treatment of the sick. They did not, however, seek to change the doctrine or principles upon which the old practice was based. They did not grasp the fact that the doctrine then universally accepted was wrong, for they themselves were firm believers in phlogosis and antiphlogistics. Blood-letting and large doses of mercury and antimony they denounced—not because of their general depressant influence, but because they were thought to be unmanageable, or that they exerted some special or permanent pernicious influence.

The efforts of these early reformers—the founders of the Eclectic school of medicine—were mainly directed along the lines of substitution, and for many years this doctrine of substitution was prominently brought forward in the lectures and writings of many of the leaders of the Eclectic school. They labored to show that substitutes for the old means were numerous, and that while they were quite as effectual at the time of need, their action was but transient, and, therefore, harmless.

The Eclectics of old had a number of substitutes for blood-letting, and some of the older men spent much time in showing how the antiphlogistic influence of blood-letting could be secured, even to the extent of syncope in active inflammation, by simply cording the limbs. This method was deemed a great improvement in treatment, as the blood could be gradually let back from the corded limbs into the general circulation, and thus the needed influence of blood-letting could be obtained in the relief of active inflammation without loss of the vital fluid. Others believed that all the good effects of blood-letting could be secured from the use of powerful cathartics; that in free catharsis the blood-vessels could be depleted almost as quickly and to a greater extent, while the vital portions of the blood were saved, and the

serum would be quickly renewed. Still other prominent Eclectics thought that this influence could be obtained by the kidneys as well as the bowels, and that the free action of both kidneys and bowels would prove at least equal to blood-letting, and have the additional merit of promoting the removal of a large quantity of effete material.

In those early days mercury was the all-powerful drug of the physicians who adhered to the doctrine of the dominant school of medicine, as it was believed to remove disease through its action on the liver. The Eclectics—then known as the reformed physicians—did not question the belief that it was absolutely necessary to energetically influence the liver, or doubt that mercury exerted a powerful control over the condition of that organ, but as with them mercury was the synonym for nearly all evil, podophyllin was selected as a substitute for it in cases where a vigorous action on the liver was believed to be demanded. In cases requiring but a mild influence leptandra was thought to be preferable to podophyllin. The necessity for a substitute for mercury, however, was not doubted—the liver had to be "tapped." But these remedies would not "touch the gums" as mercury would, and "touching the gums" was still believed to be essential to the successful treatment of many diseases, so an additional drug had to be combined with the mercury substitutes, and iris was selected to complete the influences needed in order to get all of the therapeutic effects of mercury.

Vigorous counter-irritation was also believed to be a necessity, and many means were employed to obtain it.

The blister was thought to be another necessity, and cantharides being the only certain agent, or, at least, the only one that could be employed with safety, the Eclectics retained it. It would not do, however, to go too far in adopting the methods of the old school, so they substituted for the tartar emetic ointment a vegetable irritating plaster.

"Profound impressions" were still thought to be required in the treatment of many diseases, and as these "impressions" must be made by means of active cathartics, gamboge, scammony, colocynth and other similar drugs were frequently employed.

Nauseant expectorants were believed to be necessary in diseases of the respiratory organs, and here again the plan of substitution is apparent, for they substituted for tartar emetic lobelia

and sanguinaria. They, however, retained ipecac. Stimulant expectorants must be used, and as they had none better, they kept squills, senega and tolu, and thus the doctrine of substitution ramified in every direction, and in some cases it was so slight that there was no real difference.

These errors of substitution grew out of a want of a well-defined statement of principles, and especially a want of knowledge on the part of some of the leaders of the new school.

There was a profound conviction that the old depressant practice was wholly wrong, and that in its stead treatment should be restorative. So that, in fact, while substitution was thus freely discussed, and in many instances sincerely believed in, entirely different means were employed.

The doctrine of substitution was the bane of the new school, and greatly impeded its growth, but in time the leaders began to reject the antiphlogistic plan, and recognize the influence of Nature in the cure of disease. The effect of this change in doctrine was soon seen in a more rapid growth of the Eclectic movement. But it was not until a little more than a third of a century ago, when the late Prof. John M. Scudder, M.D., brought the doctrine of Specific Diagnosis and Specific Medication prominently before the medical profession, that it became a well-defined school of medicine, with independent and fixed principles of its own.

Ever since that time the Eclectic school has denied that a depressant treatment is needed in any case, and has been governed by principles which favor the conservation of vital power in all cases. They recognize specific medication, as advocated by Professor Scudder, to be the most rational method of prescribing, and it is now the distinguishing characteristic of the school. In other words, specific medication is modern Eclecticism.

Such prejudice against this system of therapeutics as may have existed has been due to the fact that it is often misunderstood. In order that there may be no need of misunderstanding by the reader, it is here stated that the Eclectics *do not* administer specific medicines for specific *diseases* as they are classified by the generally accepted nosology. They prescribe specific remedies for specific pathological *conditions*—that is, they divide diseases into their component parts, and prescribe for them in accordance with the symptoms—disease expressions—presented.

The words "Specific Diagnosis" are employed in this work as a means of designating a diagnosis of a specific pathological *condition* (not disease) which can be removed, or, at least, opposed, by a specific remedy or remedies. This, evidently, is what is needed to give us a rational practice of medicine, and it must, therefore, constitute the foundation of "specific medication."

The physician who practices specific medication should exercise great care in making a diagnosis. When called to a patient he should first carefully and correctly diagnose the case in accordance with the nosology now accepted by all scientific physicians. He should do this for the benefit of medical science, and also for his own personal benefit. A single mistake in this form of diagnosis may prove extremely detrimental to the reputation of the physician making it. Such diagnosis, however, should have but little influence in the treatment of the patient. This should be governed entirely by the symptoms or disease expressions. Before a prescription is made the case should be thoroughly examined as to its component parts. In this latter examination it has been found wise, in diseases liable to affect different parts of the body, to commence the examination by considering the symptoms —disease expressions—manifested in and about the head; then those affecting the throat, the lungs, the pleuræ, the heart, the stomach, the liver, the spleen, the intestines, and so on downward to all parts liable to be involved. Physicians who carefully examine their cases in this systematic manner soon acquire a habit of great thoughtfulness and keen observation, and seldom fail to quickly comprehend the true import of every disease expression in any given case coming under their care.

In this study of "Specific Diagnosis and Specific Medication" we wish to make therapeutics occupy the first place, and the diagnosis will mean *remedies,* whenever this is possible. We do not care so much to affix a name by which the wrong may be known, as to prefix a remedy by the means of which the disease will disappear. In other words, the object of the examination is to determine what will remove the wrong of life and restore the patient to health. We can so study disease that its symptoms or expressions will clearly point to the needed remedial agent, or agents, and as this is the leading object of this work, we shall keep this fact constantly in view while considering the various wrongs of life.

SPECIFIC DIAGNOSIS AND SPECIFIC MEDICATION.

PART I.

SPECIFIC DIAGNOSIS.

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CHAPTER I.

A BRIEF CONSIDERATION OF NORMAL LIFE.

Life is first manifested in the form of a singe cell, composed of a mass of protoplasm. This mass of protoplasm contains a nucleus, and the simple substance we call a cell possesses a certain power which enables it to take to itself nourishment, and in this way obtain material for its sustenance and growth. It also possesses the power of reproducing its kind, and of exercising all independent action necessary to its elementary form of life, and incidental to its evolution from this elementary life to its position as a part of a higher and a more complex form of life.

Man's body is composed of cells and cell derivatives, arranged in such a manner as to act in harmony—the one cell aiding the other in its specific labor incidental to its position as a part of the organism we call man. These cells work in harmony by each taking from the surrounding medium that which is adapted to its individual development and functional activity, and rejecting or carrying to the neighboring cell that for which it has no need, and which is needed for the development, repair or functional activity of another of the community of cells contained in the part or parts of the human body.

In man cell function is largely controlled by the influence of the nervous systems. Still, the power of individual action by independent cells prevails, and each cell possesses the faculty of selecting that which is adapted to its individual use, without regard to the action of the other cells. Upon this selective faculty

of individual cells must we ever largely depend for the beneficial results of drugs, as it is owing to this selective power that we are enabled to medicate certain portions of the body.

The life of health should be thoroughly studied, in order that we may be able to recognize every manifestation of this life by our senses.

We must bring our own senses to bear upon the living human being, and *know* how he feels, smells, looks and what sounds he makes. In other words, we must *know* him as a *living* human being. This study of the living man is the most important study in medicine.

There is but one way of making a good surgeon. He must exercise his senses on the human body. He must study the cadaver and learn the relation of the parts of the human body; and he must also study the living man and learn to recognize these relations by the sense of touch. The accomplished surgeon recognizes a displacement or fracture as soon as his eyes rest on the part. Let him pass his fingers over a limb in the dark, and he knows at once if anything is wrong, and just what the wrong is. He is a good surgeon just exactly as he is an expert in the knowledge which enables him to do this.

The medical student should supplement his study of anatomy and physiology from books by a study of anatomy and physiology on the *living* man. He should observe him closely until he learns his varied expressions. He should carefully watch him walk, sit, lie, work, eat, breathe and talk. He should feel of him, see how he is made, and what he feels like in different parts. He should learn every prominence of bone in the body and its relation to articulations, blood-vessels, nerves and organs. He should hear every sound he makes, and learn to recognize its character. In fact, he should learn everything concerning the living man, from the crown of his head to the soles of his feet, and learn to analyze him with his own senses. When he has accomplished this he will have laid the foundation for a good physician.

Our senses should be so trained that we may be able to observe well. These faculties are like many others; they may be so trained under the influence of the will that after a time they work automatically, and with a rapidity that is astounding. All that one need do, to have good, active senses, is to use what he has rightly. Man's conscious life is in and through his senses,

and as these are educated and enlarged, his life becomes larger and his pleasures increased.

The study of anatomy is the basis of a sound medical education. One should not only be able to name the bones, processes, muscles and organs of the body, but he should also *know* them thoroughly. In order to become a skilled diagnostician a physician must be able to recognize at once the normal from the abnormal in size, shape and position of any part of the human body. This can be accomplished by a study of anatomy from the skeleton and by dissections, assisted by reading and lectures, but such study should be regarded as preliminary to a more important study. We must also study anatomy from the living man, and this latter study should be thoroughly made. We want to *know* the situation and the relation of the various parts, so that we may be able to detect the slightest variation at once. We want the impress of the living man upon our senses, so that they may *know* him intimately. We want to know his every expression, standing, sitting, lying on his back, sides, etc. His expression in activity and at rest. We study his muscles in life, their arrangement on the bones, and their influence in giving the body motion. We study the situation of blood-vessels in the same manner, and learn to trace their course by the prominences of bone, relation to muscles, etc., and, going deeper, we study osteology again, as the bones are clothed in tissue.

There are two objects in studying anatomy in this manner, both important. The one is to *know* the mechanism of life, and the other is to educate the senses.

A thorough knowledge of physiology is also of the utmost importance, and that which can be learned from books must be acquired before one can become a good physician, but it is not sufficient for the purposes of the specific diagnostician. We not only wish to learn all that can be told by authors of works on physiology about certain phenomena which they have witnessed and learned to know as constant expressions of life, but we wish to *know* them ourselves, and through our own senses.

"The body of a living man performs a great diversity of actions, some of which are quite obvious; others require more or less careful observation; and yet others can be detected only by the employment of the most delicate appliances of science.

"Thus, some part of the body of a living man is plainly

always in motion; even in sleep, when the limbs, head and eyelids may be still, the incessant rise and fall of the chest continue to remind us that we are viewing slumber and not death.

"More careful observation, however, is needed to detect the motion of the heart; or the pulsation of the arteries; or the changes in the size of the pupil of the eye with varying light; or to ascertain that the air which is breathed out of the body is hotter and damper than the air which is taken in by breathing.

"And lastly, when we try to ascertain what happens in the eye when that organ is adjusted to different distances; or what in a nerve when it is excited; or of what materials flesh and blood are made; or in virtue of what mechanism it is that a sudden pain makes one start—we have to call into operation all the methods of inductive and deductive logic; all the resources of physics and chemistry; and all the delicacies of the art of experiment." (*Huxley.*)

The first lesson we learn from these brief but expressive paragraphs is, that *we* are to observe this man, who "is plainly always in motion," and that we are not to be satisfied with the observations of another. Then follows the natural sequence in these observations. At first the gross expressions of the body, and the difference between the man awake, asleep, dead. Next a "more careful observation," determining the motion of the heart, etc. And lastly, the skilled observation, from a trained mind, aided by the various instrumentalities and appliances of science.

Books are necessary in this study—they serve as guide-boards, pointing the way, and at the same time give us a standard of comparison. They tell us what to exercise our senses upon—what to observe—and they also tell us what others have observed, and what is the common standard of healthy activities.

There is nothing in the life of man but should be a subject of close scrutiny. We want to know him in the entirety of his action, as we wish to know him in every detail. And we want to know him so intimately and thoroughly, that this physiological man shall be always present with us as a standard of comparison.

The reader will at once see the necessity of this study as a basis for diagnosis. The physiological man is the man of health, the pathological man is one who has left this common standard of being. The physiological man is the standard of measurement, the common mean that we measure from. To have a measurement at all, it is necessary to have a fixed point to start from;

this healthy man is the fixed point. Measurement has reference to certainty, and certainty is what we most desire in medicine.

The first thing that the physician wants, then, is a sound physiological standard, which he carries with him as he makes his rounds. It is lain by the side of the patient in bed, sits by him on the chair, stands by him, walks by him, puts out its tongue, extends its hand to give the pulse, has lungs, bowels, kidneys, reproductive apparatus, etc., always at your service, and open for comparison.

Disease is wrong life, and a wrong presupposes a *right*. To determine the existence of a wrong, we must know what the right is; to determine the character of the wrong, we must compare it in all its parts with the standard set. This is diagnosis, as the reader can at once see.

How shall we get this physiological standard? Clearly, by observation with our own eyes and the use of our own senses. Each man must make it for himself, and give it distinctness by the education of his own senses. Theoretical knowledge will not do.

If we carefully observe the phenomena of sleep in the infant, child and adult, we cannot fail to discover that the expressions of sleep are distinctive, and soon have a healthy standard by which to be guided.

There are also distinctive expressions of the body in death that cannot be counterfeited. It is not only the absence of motion, of respiration, of pulse, or heart-beat, of heat, but there is an absence of the expression of life in its totality, and an expression of lifelessness that is characteristic. The relaxation of death is distinctive, as is the rigor mortis, and as is the decomposition of tissue.

It is well to have two points to measure from—the standard of life and the standard of death. There is an approximate death, as well as a total death; a dying by degree, or part, as well as a dying at once and in entirety.

Taking a man in entirety, we find a distinct expression when he walks, stands, sits, or lies. Every part of the man talks to us, his hands, his arms, his legs and his feet.

We not only learn from this much of the physical life of the outer man, but learn of the life within. The expression is the shadowing forth of the underlying nervous system. As physical

and mental health has a distinct expression in the outer man, which we purpose using as a standard of admeasure; so all diseases, physical and mental, have a distinct expression in the outer man.

We have a standard of temperature which we readily measure with the thermometer. We have a standard electrical condition as an important factor of life, which we will learn to recognize in the general expression and movement, the special expression of the face and eyes, and by the touch. We also have a standard formative force, which we will recognize in the expression of tissues, and the sensations they give to touch.

We have a standard color for the general surface, and for special parts that the eye will learn to recognize, and use for comparison. We make this study thorough; it is the skin at large, and then those portions where the circulation is less free, where it is very superficial and free, the nails, hair, veins, etc. We have a standard color for mucous membranes, for lips, gums, tongue, etc.

We have a standard in touch—of smoothness, resistance, elasticity, size and association; and we have it of every part of the body. Of course, we cannot learn it from books. We must learn it by the use of our own hands and on the human body.

We have a standard respiration, in frequency, fullness, depth and freedom, which is distinct and clear, and which we know of ourselves by observation.

We have a standard circulation, which we know at the radial artery, by the even, distinct, regular blood wave that passes under our finger, as well as by the expression of parts associated with the heart in action.

We have a standard condition of the digestive organs, which we learn from books and by observation. It does not take long to establish such a standard if we closely observe the general expression and the special expression of the muscles of the mouth.

Blood-making and nutrition must have distinct expression, and a standard for measurement will be readily formed, for all functional activity is dependent upon nutrition.

The standard of healthy excretion by skin, kidneys and bowels is readily formed by observation. Not observation on the sick,

and under the influence of drugs, but upon the healthy human being.

The education briefly referred to in the foregoing is essential to good diagnosis, and its attainment, therefore, of the utmost importance to the practitioner of medicine.

The normal senses of man are capable of great development, and in the next chapter brief suggestions will be given in regard to their cultivation.

CHAPTER II.

CULTIVATION OF THE SENSES.

THE physician should give earnest and careful attention to the education of all his senses, especially to those of sight, hearing and touch. These senses should be so trained that they will not only do rapid and accurate work, but also act in harmonious association. A cultivated sense of sight alone is often capable of deciding the diagnosis in many diseases of the nervous system. An abnormal development of features and peculiarities of expression tell to the educated sense of sight a story which often makes for correct diagnosis.

The knowledge acquired from books and lectures is the foundation of a medical education, but it is insufficient for all the needs of the physician who wishes to make a success of his life-work. It must be supplemented by a thorough cultivation of the senses, and the brain must also be so educated that it will quickly receive impressions and make deductions.

Attention has been called to the proper study of anatomy, by which one may *know* the structure of the human body of himself; and the right study of physiology, by which one may *know* the various activities of this mechanism. To make these attainments requires continuous exercise of our senses upon the human body.

The same course of study is necessary in order to obtain a thorough knowledge of disease. The descriptions given in works on the practice of medicine do not contain all the knowledge needed. We want to *know* disease for ourselves, and it must be learned by the exercise of our senses upon diseased bodies.

If the senses, then, are the instruments by which we obtain knowledge, it will at once be patent to the reader that their

development and goodness will be the measure of our ability and our attainments. Hence the man of educated and acute senses will be far superior to and have every advantage over the man who has not been thus trained and developed.

The law of development is always in operation in the human body, as it is throughout the animal and vegetable world. *As any organ or part is rightly used, it grows in capacity.* Not only in infancy, in childhood, up to adult years, but each and every year of a man's life to old age. It is more marked, of course, when the reproductive powers are active, but it is always a law of life.

There is another view of the question, and one which is quite as important to many persons. The law is not only operative in the one direction—to increase functional capacity—but quite as much so in the other direction—to lessen or take away that we have. The part or organ disused loses its functional capacity, becomes atrophied, and finally loses the power of reproduction—is wholly gone. The Indian fakir, who vows to hold his arms above his head, finds after years are passed, that they are no longer obedient to the will; their power is lost. This is the case with any part of the body—with the organs of special sense, and with the brain and functional activities.

It is the continued and orderly exercise of parts that gives them increased capacity. The organs of special sense have in them a mechanism for skilled use, as well as for the gross purposes of life, and it is this skilled use that we must call forth in diagnosis.

The senses of touch, of sight, of hearing and of smell are all useful in this study of diagnosis, and they all require training. The physician of unskilled touch, sight, hearing or smell can never make a skillful diagnostician. It is hardly necessary to give examples of this, as every physician's experience will show it a truism.

The unskilled touch could not recognize the variations of the pulse, or determine the condition of the skin, or do a great many things that might be done by the educated sense of touch.

The untaught eye cannot distinguish the variations of form, size, color and other physical properties of bodies, which tell of condition and functional activity.

In medicine the ear requires education by use in order to

detect some of the minute sounds, as the respiratory murmur, and a still further education to detect the minute shades of difference in sound, which tell of disease.

The uneducated sense of smell has no power of analysis, and the uneducated sense of taste is satisfied with the gross classification which divides all substances into pleasant and unpleasant. To the educated taste there is every gradation of the one and the other, and a power of great discrimination that is sometimes really wonderful in its acuteness.

We cultivate the senses by continuously using them, and their education is the work of months and years. We can always find objects to exercise them upon, the training school is all about us, and we have only to make intelligent use of the facilities at our command. It is well, however, to have an intelligent plan, and follow it up assiduously, recollecting that "time, patience and perseverance will accomplish all things."

The senses are intimately associated with the brain, and their education implies a mental training as well. Whilst we develop the organ of sense by use, we develop the brain upon which the impression is made, and the higher brain which takes cognizance of, and analyzes, the sensations. The development is thus a double one, and both are essentials in correct diagnosis. A plan presupposes thought, the act of the rational mind, as well as orderly activity.

The tactile sense has its highest development in the hands, and it is in this locality that it should be cultivated. Delicacy of touch is associated with normal condition of the skin, and necessitates much care of the hands. This means proper protection from cold, cleanliness and an avoidance of such work as thickens the epidermis, or gives it unnatural hardness. A plan of education suggests itself at once; the touch can be exercised upon every object we come in contact with. Objects large and small, long and short, rough and smooth, of varied form, with inequalities of surface and of varied consistence, are readily found, and upon which the sense of touch can be exercised until they can be recognized as well in the dark as in the light. Take the bones of the skeleton and learn to recognize them by the touch as well as by the sight. Take the dead body and train the touch to recognize every part by its form and resistance. Take the living

body and learn to recognize the impressions given by the skin, fasciæ, muscles, bones, and by the cavities of the body.

In obstetrics a skilled touch is a necessity. Without it the various conditions and presentations cannot be recognized. The sense of touch is first trained by general use, and then we find opportunity upon the child already born, to acquire the knowledge of how a cranium, suture, fontanelle, nates, genitalia, shoulder, elbow, hand, knee, foot, feels—it is easy enough to find the opportunity, if one is inclined to learn, and it is easy enough to get this necessary skill in obstetric diagnosis if one is inclined to improve his opportunities.

The sense of sight is one of the most important in diagnosis, and it, like others, requires education, both as to the eye which receives and the brain upon which impressions are made. The eye receives impressions of color, and by education learns to detect the form, size, distance, and many of the physical properties of objects.

Color being one of the prominent characteristics of health and disease, the ability to accurately distinguish colors must be a great aid to the physician. The uneducated eye receives the impress of color very much as it does light and shade, attaching about the same meaning to it, but when trained by use it readily detects slight variations.

A cabinet of colors is easily formed from natural objects which will greatly aid the student in his study of colors in detail. The vegetable and insect world furnish colors in great abundance, and specimens can be readily preserved. Quite soon the eye has learned to distinguish color from light and shade, and in a few weeks will become quite skilled, and yield much pleasure by the habit of observation thus acquired. There is nothing trivial in nature, and nothing so poor or worthless that it should not be known; this is especially true to the physician because he must be a student of nature, to be able to deal with nature's greatest work, the human life.

The practical education of the eye to color is completed upon the human body. We find distinct varieties of color in health—of skin, of mucous membranes, of parts where the circulation is superficial, showing arterial blood, of veins, of the eye, the nails and the hair. We want to learn to know the healthy man by his color, and we may know him by this.

There is also abundant opportunity to educate the eye to the variations of color in disease, so that they will be readily recognized, and their true meaning known.

The training the eye to the determining of size is not so important, yet will be found quite useful. One physician will recognize a swelling, which evidences local disease, which another has failed to notice. So one will recognize a fullness of skin, of cellular tissue, of mucous membrane, of tongue, which another fails to see.

Training the eye to recognize form is very important, both to the physician and surgeon. The trained eye of the surgeon at once detects a deformity, and determines its cause, whether from fracture, dislocation, or structural disease. The trained eye of the physician should be able to recognize at once the general form of health, in the posture and expression of the patient, and the evidences of disease in the changes of form, in position, in sitting, lying, in the position of the limbs, and in the expression of the features. The trained eye recognizes changes in the form of the tongue, which express conditions of disease, and call for special remedies.

In diagnosis an educated sense of hearing is of very little less importance than an educated sense of sight. It requires close and continued study to hear the respiratory murmur distinctly, and this study must be continued if we expect to recognize the variations of this and the sounds produced in the bronchial tubes. Skill in physical diagnosis does not come by nature; it is the result of study, and the education of the ear and brain. No man can expect to succeed in it unless he is willing to give months to it, first to educate the ear to the hearing and analysis of sound, and next to the hearing and analysis of the sounds heard in the chest.

The sense of smell is of less importance, and yet it has its place in diagnosis. To some extent this sense is instinctive, especially as it warns against irritant substances and leads to their avoidance, but it is capable of being educated to a very high degree.

We need a cultivated sense of smell for the purposes of diagnosis, and we especially want a reliable sense of smell when looking after the hygienic surroundings of our patients. There is often an abundance of bad odors about the sick-room—some

peculiar to the condition of disease and some to the result of a lack of cleanliness and ventilation. We want to differentiate these offensive odors, and to be able to do so we require an educated sense of smell. This sense should be so trained that it will transmit sensations to a brain which has also been trained by use to receive and analyze them.

The sense of smell can be educated in the same manner as the other senses. We use it in the recognition of odorous objects, and pursuing the study we learn to discriminate between odors and recognize them immediately, as well as the character or conditions of the bodies they express.

The educated sense of smell will recognize a want of bathing on the part of the patient, a want of ventilation, dirty clothes, dirty bedclothes, and all other unclean things in and about the sick-room. It will point out conditions of disease, and recognize sepsis, loss of life and breaking down of tissue; and suggest for our consideration such remedies as echinacea, baptisia, chlorate of potassium, sulphite of sodium, sulphurous acid, phenol, permanganate of potassium, boracic acid, and others of equal importance.

The sense of taste is an important one, and it should be well educated, but we cannot make much use of it in medicine. It is well, however, that we should be able to intelligently use it whenever we have reasons to think that the food which our patients need is not being properly prepared.

There are some things that the physician will do well not to cultivate a taste for or in. He should not be a connoisseur in liquors. It is far better that the patient run the risk of getting bad whisky, brandy, or wine, than that his medical attendant should have acquired the ability to determine for him. If there is any one road shorter than another to want of success, loss of character, poverty and wretchedness, it is the habit of tippling. The road seems especially broad, smooth and direct to the doctor.

We have thus briefly referred to the education of the senses, and examined the means by which one is prepared for the practice of medicine. We regard this self-education of the senses as the basis of skilled diagnosis and therapeutics. All knowledge is available in medicine, and we fully appreciate the value of the present advanced course of medical study. The study of medicine and the collateral sciences should be carried as far as pos-

sible, but unless the physical organism be thoroughly trained the usefulness of such knowledge will be greatly lessened.

CHAPTER III.

DISEASE A METHOD OF LIFE.

A human being has but one body, and though it may be divided into parts, each has the same life, is supplied from the same blood, governed by the same nerves, and has the same nutrition and waste. Only in so far as drugs act on special parts or organs, need disease be studied independent of the organism at large.

A human being has but one life, and it is the same for all parts. The normal manifestations of this life are called health; the abnormal manifestations of it disease. If disease can always be thought of as a method of life, in a living body, a great error will have been gotten rid of, and a step will have been made toward a correct diagnosis, as well as toward rational therapeutics.

Disease is not an entity—something which can be expelled from a living body—but it is actually a method of life.

The life of disease is an inferior form of life—not the pleasurable form of health, neither in the whole body nor in any individual part of it. It is always exhaustive, impairing the life now, and the life to follow by renewal of tissue. It makes no difference what may be the seeming condition of the body, or a part, in disease, the real condition is an impairment of life. The disease should, therefore, be studied as a method of living; and the diseased body treated as a living body, which has been placed in such position that its life has been enfeebled or deranged.

The structure and uses of the various parts of this one body must be clearly understood. We want to know clearly the conditions necessary to healthy life, and how their change that we call disease works. If we can understand clearly the relation of a condition or function of healthy life, we are in a position to learn how the change in condition or function produces disease, and a correct therapeutics is at once suggested.

On examination of the human body it is found that certain

conditions and functions underlie others, and seem to be *first* elements in the sum of life. Of these may be named temperature, circulation, innervation, nutrition and waste, and the blood. These should always be studied first, for we want to know the exact character of the wrong, in one or all, and how that wrong can be corrected.

In disease one or the other may stand first, and serve as a basis for wrong life in many directions. Thus, a disease involving every function of life may arise in a wrong of the temperature and circulation of the blood. If the normal temperature and circulation can be restored by direct remedies having no depressing influence, the entire process of disease will disappear, or, at least, become so modified as to promptly yield to any necessary additional treatment.

Of course, it is not always easy to determine the wrong which stands first, yet with care it may be determined, and its determination is an essential in specific diagnosis.

Disease has certain expressions, which we call symptoms, as health has certain expressions. The manifestations of life in health are very uniform and consistent. So in disease, the expression of morbid life is uniform and constant. If, therefore, we determine in any given case the *exact* expression of diseased life, we will find it the same in all cases.

It is of great importance that we should become conversant with the exact character of a lesion, but it is of still greater importance that we should know the exact relation of drug action to disease expression, and how the one will oppose the other, and restore health. If an expression of disease can be pointed out which will be almost invariably met by one drug, and health restored as a result of its action, one step has been made toward a rational practice of medicine.

If we have once determined such relationship, we have determined it in all diseases alike, in all persons, and for all time to come. If with this symptom or group of symptoms, aconite, nux or podophyllin cures to-day, it must be evident that it will cure all *exactly* similar cases in the future.

The first lesson in pathology we want to learn is, that disease is *wrong* life. The first lesson in diagnosis is, that this *wrong* life finds a distinct and uniform expression in the outward manifestation of life, cognizable by our senses. The first lesson in

therapeutics is that all remedies are *uniform* in their action; the *condition* being the *same,* the *action* of the remedy is always the *same.*

CHAPTER IV.

A CLASSIFICATION OF DISEASES.

The classification which follows is not presented with the expectation that it can take the place of the nosological classification usually found in works on the practice of medicine. It is believed, however, that it will prove of value to physicians who endeavor to treat pathological conditions in a rational manner.

The object of classification is to notice the resemblances rather than the differences, to determine the pathological wrongs common to a series of diseases rather than to determine the special symptomatic differences. In discussing the usefulness of classifications of disease, an eminent writer remarks:

"It is obvious that any single character, or combination of characters, in respect of which diseases agree with or differ from each other, may be made the basis of methodical arrangement, under a larger or smaller number of divisions, or of higher or lower genera, or of classes, orders and genera. By ingenious devices of the mind the physician or the statist may classify and arrange his knowledge so as to bring it all more readily within his reach for any special purpose—so as to make it, in fact, more at his disposal—to facilitate and pave the way for further investigation. Such are the legitimate objects and the results of all methodical arrangements. Classification, therefore, being only a method of generalization, there are, of course, several classifications of disease which may be used with advantage for special purposes. The physician, the pathologist, the jurist, the hospital statist, the army or navy medical officer, may each legitimately classify diseases from his own point of view, and for his own purposes, in the way that he thinks the best adapted to facilitate his inquiries, and to yield him general results. The medical practitioner may found his main divisions of diseases on their treatment, as medical or surgical; the pathologist, on the nature of the morbid action or product; the anatomist or the physiologist, on the tissues and organs involved; the medical jurist on the suddenness, slowness, violent or unnatural mode of the death; the hospital statist, on the kind of diseases which are treated in its wards; and all of these points of view may give useful and interesting results.

"There is thus no question on which more diversified opinions are legitimately entertained than on that of classification. Although it is the aim of all systematic writers and observers to arrange the objects of study in the most natural order possible, and although diseases are named as if they were individual entities, yet they present so great varieties that they will not admit of that definite and, in many respects, natural species of classification which can be made with objects of natural history. Manifest reasons of convenience and facility for work can therefore be assigned as the great incentive to classification; and numerous reasons exist for classifying diseases in various ways: (1) Men differ in their estimation of the characters on which different arrangements may be founded; (2) the facts and phenomena of diseases on which classifications may be made are not all regarded from the same point of view. Most systems are avowedly *artificial,* being arranged with the view to elucidate or support a theory, or otherwise to effect a definite end. For example, by classifying diseases and recording the causes of death, the most valuable information is obtained relative to the health of the people, or of the unwholesomeness and pestilential agencies which surround them. 'We can take this or that disease,' says Dr. Farr, 'and measure not only its destructiveness, but its favorite times of visitation; we can identify its haunts and classify its victims.' We are able to trace diseases also as they perceptibly get weaker and weaker, or otherwise change their type, as some have done from time to time. We know from the valuable returns, prepared periodically, that certain diseases are decreasing, or growing less and less destructive; that certain other diseases have ceased in some measure; while other severe diseases have exhibited a tendency to increase. The advantages, therefore, of adopting some system of classifying diseases, which can be put to such useful practical purposes, must be obvious to every one."

We want to learn the natural history of diseased life as we have learned the natural history of healthy life, and a classification and nomenclature will aid us in acquiring this necessary knowledge.

The generally accepted nomenclature of disease is a necessity. It is absolutely necessary to be able to name a disease correctly according to the commonly received nosology. The name, however, should not have anything to do with the management of a case or the selection of remedies.

We will endeavor to simplify our classification, so as to make it a good guide for study, as well as suggestive of causes of diseases which may be avoided, of right attention to hygiene, and an outline of treatment.

The first division will have reference to causes of disease, as well as to pathological conditions. It will be into *epidemic, contagious, endemic* and *sporadic* diseases. The reader will notice that this is a natural classification, referring to causes of disease and their avoidance, and to a less extent to the conditions of disease and means of cure.

The second division will have reference to the *general* or *local* nature of the morbid states, and, as will be noticed, occupies the same ground as the preceding, this having reference to the conditions of diseases and not to its cause. All disease may be classified under these two heads, though many times it will only have reference to the primary lesion, for as the wrong goes on, a disease which was primarily general becomes localized, and one which was primarily local will cause general disease.

A third division has reference to the structure of parts or to their functional expression, and diseases are divided into *structural* and *functional.* Again, it will be seen that this classification of disease occupies the ground of both the first and second, for all disease must be structural or functional. Here, as before, we find it especially applicable to the primary disease, for one may have commenced as a functional wrong and grown into a structural disease, or a structural disease may have first existed, but this being cured, other functional lesions persist.

A fourth division might be called physiological, and would have reference to the functions of the body. If, for instance, we make the usual classification in teaching the principles of medicine:

Force.....	Formative Heat Electricity
Cells.....	Formative—tissue making Secreting—does the work of secretion Necrological—pus cells
Nutrition....	Digestion Blood making Tissue making
Secretion....	Recrementitious Excrementitious
Circulation...	Arterial Venous Capillary
Innervation..	Brain Spinal cord Sympathetic

Taking this classification, and assuming that there is a normal standard of health which may be known, and that disease is a departure from this standard, all lesions may be classified as being in *excess, defect,* or *perversion.*

The classification which follows is taken from Williams' "Principles of Medicine":

PRIMARY ELEMENTS OF DISEASE.

Structural Constituent.	*Its Function.*	*Disease.*	*Structural Disease.*
Secreting structure	Irritability, Tonicity	Excessive	Excessive—Hypertrophy
Nervous structure: Tubular (the conductor of nerve force); Vesicular (the generator and combiner of nerve force)	Sensation, Voluntary motion, Involuntary motion (excited motor action), Sympathetic action	Excessive	Excessive—Hypertrophy
Secreting structure	Secretion	Deficient	Deficient—Atrophy
Elementary components of the blood: Red corpuscles, White corpuscles, Fibrin, Albumin, Oil and combustive matters, Inorganic ingredients (saline and mineral), Water		Deficient	Deficient—Atrophy
Elementary changes in the blood: By respiration, By secretion, By nutrition, By foreign matter		Perverted	Perverted—Degeneration

PROXIMATE ELEMENTS OF DISEASE.

The circulating blood:

- Deficient in quantity—Anemia: General. Partial.
- Excessive in quantity—Hyperemia:
  - General—Plethora.
    - With circulation: Increased—Sthenic; Diminished—Asthenic
  - Partial—Local hyperemia
    - With circulation: Increased—Determination of blood; Diminished—Congestion; Partly increased—Inflammation; Partly diminished—Inflammation
- Perverted in quality—Cacemia

Nutrition of textures:

- Deficient—Atrophy
- Excessive—Hypertrophy
- Perverted: Degenerations of tissues; Morbid deposits; Morbid growths

It will be seen that these various classifications point the way to certain necessary studies, having reference to causes of disease, their general expression and their influence on the functions of life.

Diseases are first divisible into *general* and *local,* and the first may be arranged according to an approved classification as follows:

- General Disease—Dyscrasia
  - Tabes
  - Chlorosis
  - Scorbutus
  - Dropsy
  - Diabetes
  - Rheumatism
  - Pyemia
  - Tuberculosis
  - Carcinoma
- Lesions induced by
  - Specific Agents
  - Vegetable Substances
- Fevers
  - Periodic
    - Intermittent
    - Remittent
    - Yellow
  - Continued
    - Febricula
    - Synocha
    - Typhoid
    - Typhus
  - Eruptive Contagious
    - Variola
    - Scarlatina
    - Rubeola
  - Zymotic
    - Spotted
    - Cerebro-spinal Meningitis
    - Diphtheria
    - Erysipelas

Local diseases are usually arranged in groups according to the function of parts. This seems to be the most natural arrangement, as the expression of disease is frequently wrong of function.

- Of the Nervous System
  - Of the Brain
  - Spinal Cord
  - Sympathetic

  Structural / Functional
- Of the Organs of Special Sense
  - Eye—sight
  - Ear—hearing
  - Nose—smelling
  - Mouth—taste
  - Skin—touch

  Structural / Functional
- Of the Respiratory Apparatus.
  - Nose
  - Pharynx
  - Larynx
  - Trachea
  - Bronchia
  - Lungs
  - Pleura

  Structural / Functional

Of the Circulatory Apparatus..	Heart Pericardium Arteries Capillaries Veins Lymphatic Vessels Lymphatic Glands	Structural Functional
Of the Digestive Apparatus...	Mouth Salivary Glands Tonsils Pharynx Esophagus Stomach Small Intestine Large Intestine Liver Spleen Pancreas Peritoneum	Structural Functional
Of the Urinary Apparatus.....	Suprarenal Capsules Kidneys Ureters Bladder Urethra	
Of the Reproductive Organs..	Scrotum Testes Vesiculæ Seminales Prostate Penis Ovaries Uterus Vagina Vulva Urethra	Structural Functional
Of the Skin.....	Cutis Vera Rete Mucosum Epidermis Sudoriferous Glands Sebaceous Follicles Hair Nails	Structural Functional
Of the Organs of Locomotion.	Bones Articulations Cartilages Muscular Tissue Fibrous Tissue Connective Tissue	Structural Functional

General Classification.

We will make a study of disease according to four general divisions: (1) With reference to the cause—*epidemic, contagious, endemic, sporadic;* (2) as it is *general* or *local;* (3) as it is *structural* or *functional;* and (4) as it shows a departure from the *physiological* standard.

Epidemics.

Many physicians have recognized the fact that the conditions of life change from time to time, and that as the result of this there are variations in the wrongs of life—diseases—and in their expression. That in some years and seasons, these changes were so great as to give that character to disease which is usually known as epidemic. The fact has been recognized that this epidemic condition might influence but one disease, or a class of diseases, as those called contagious, those called zymotic, or it might influence all diseases or pathological states.

The general epidemic influence is known by some special character of disease, which is widespread, and is noticed in many localities. In some cases it will be seen as a condition of asthenia, in others of undue excitation. In some it partakes of the zymotic character, and this influence upon the blood is noticed in a majority of cases of acute disease. Physicians will recollect it under the name of *typhoid,* giving a peculiar character to fevers and inflammations, and even noticed in minor affections.

This epidemic influence is frequently marked by special symptoms calling for special remedies.

The reader will have no doubt observed that the diseases of some seasons, no matter how diverse in special characteristics, would have something in common, which something would be especially manifest in the treatment, so that when you had once determined a good treatment, you would persist in it for nearly all affections, with very little modification.

This brings prominently before us the fact, for fact it is, that there is an endemic or epidemic constitution of disease, that should be well studied, and always regarded in treatment. Success or failure will very frequently depend upon this knowledge.

If this theory of epidemics is borne out by future observation, it must have an important bearing upon therapeutics. If we determine a common element in the diseases of a season, we will have something common in the remedies. If we have an underlying influence of this kind, giving character to disease throughout a considerable extent of country, it is an influence that should be known, and have due weight in our estimate of pathological processes. If we can go still further, and find certain epidemic

remedies opposed to this influence, whatever it may be, it will greatly aid our treatment.

We find years in which the peculiar wrongs known as typhoid are prominent. All acute diseases seem to partake of this character, and if of considerable duration, typhoid symptoms will be developed. Pneumonia, dysentery, intermittents and remittents run into typhoid, as well as other diseases. This epidemic influence is readily recognized, and suggests treatment.

Zymotic diseases are not unfrequently epidemic, or have underlying them the epidemic character. It is true they frequently produce a specific contagion, which serves as a cause of their propagation, and this we wish to keep distinct from the character we are now studying. The epidemic influence is that which renders the community very susceptible to the contagious poison, or gives it specific characters, or renders it more destructive to life.

Readers will readily recall epidemics of this character—seasons in which smallpox, scarlet fever, measles or whooping-cough were remarkably prevalent, easily transmitted, difficult to protect against, possessed distinctive features, and required special treatment. They will likewise recall the fact that in these years other diseases would show similar peculiarities, and would require similar remedies. This will have been noticed in local complications, as well as in the general features. That in some years there was a remarkable tendency to disease of the respiratory apparatus, or of the bowels, or of the kidneys, or of the nerve centers, and that these local affections were to be met with as complications of all diseases.

We are acquainted with quite a number of epidemic remedies, and find the list continuously enlarging. So marked is the influence, and so distinct the features, that we sometimes find a single remedy sufficient for the entirety of disease. It is possible that we may make the best study of remedies in such seasons, for it has been noticed that if a remedy has thus proved markedly curative at such times, the epidemic symptoms indicating it being pronounced, the remedy would prove curative in sporadic, endemic, or contagious diseases, wherever the special symptoms were present.

The remedies worthy of special notice in this connection are quinine, hydrochloric acid, sulphurous acid, sulphite of sodium, chlorate of potassium, echinacea, baptisia, aconite, ferrum phos-

phoricum, veratrum, gelsemium, rhus toxicodendron, tincture of the muriate of iron, nitric acid, belladonna, bryonia, nux vomica, etc. All of these may be advantageously studied in this connection.

Contagious Diseases.

Certain diseases are produced by a specific cause and propagated from person to person. In them we find that the contagious element is continuously reproduced in kind, and the expressions of disease are alike. It may and often does vary from epidemic influences, and from endemic influences, but in general features there will be a remarkable likeness, and in therapeutics there will be something in common.

The diseases grouped under this head are the eruptive fevers, whooping-cough, erysipelas, puerperal fever, diphtheria, cerebro-spinal meningitis, cholera, typhoid, typhus and yellow fevers, inflammation with typhoid symptoms, and some other fevers and inflammations. These diseases have certain distinct expressions which are fully given in works on practice. Attention is here called to these expressions for the purpose of using them as specific indications for remedies. They suggest agents that destroy the material of contagion, great cleanliness, and a sustaining treatment.

The prominent symptoms seen in measles suggest bryonia and ferrum phosphoricum. The first few doses may be given in very hot milk. Asclepias may constitute a part of the treatment if needed to favor determination of the eruption upon the skin and relieve irritation of mucous membranes. Drosera is the special remedy for the cough. In some cases marked indications for magnesia phosphoricum will be seen.

In scarlatina, belladonna is always an indicated remedy, and in many cases much needed as a stimulant to the capillary circulation of the skin. It may be combined with aconite or ferrum phosphoricum, as indicated by the symptoms. Fatty inunction may be employed to allay itching and favor desquamation. If other children live in a house in which scarlet fever occurs, minute doses of belladonna as a prophylactic should be administered to them.

In whooping-cough the symptoms suggest magnesia phosphoricum, drosera, belladonna, nitric acid and trifolium pratense,

to be employed in accordance with the special indications presented in each case.

Zymotic Diseases.

All contagious diseases may be classed as zymotic, but all zymotic diseases are not contagious. Erysipelas, diphtheria and cerebro-spinal meningitis may be epidemic, endemic or contagious, and they should be studied in each of these classes. When they prove contagious it may be from either one of two conditions—the intensity of the diseased action, or the loss of life and breaking down of the tissue.

In studying erysipelas we find that it sometimes develops remarkable virulence in this direction, so much so that it will attack almost every surgical case in a hospital, and will be contracted by nurses and others. This, of course, will be noticed especially in certain years (epidemic influence) and in certain localities (endemic influence), but we cannot neglect to notice the contagious element.

In the one case we notice the *intensity* of disease, both as to its local and general symptoms. The part is intensely hot, burning, painful, and is dry and tense, and its color, whether bright or dark, is vivid. The pulse is frequent, tense, and unyielding, the temperature has a high range, and the nervous system shows great excitation. Whenever such symptoms show themselves, we may fear contagion, and will employ means to prevent the infection of others.

In the second case we have the evidences of sepsis and deliquescence of tissue. Locally the part is full, and wants elasticity, the epidermis yields, and presently the connective tissue. The discharge becomes offensive, the pulse oppressed and feeble, and the tissues at large softened.

In the first class of cases remedies should have reference to the intensity of the diseased action, and consist principally of veratrum, rhus, apis, belladonna and tincture of the muriate of iron. In the second, echinacea and other proper antiseptics, with restoratives, will be needed.

In puerperal fever the same two elements of contagion are quite as marked as in erysipelas. But there is added a third, an infectious material thrown off from the reproductive organs. So marked and virulent is this, that it is readily communicated by

the physician from patient to patient, even through an interval of days or weeks. It is not only thus infectious, but is intensely poisonous to the patient, and its re-absorption intensifies disease, and frequently leads to a fatal result.

In these cases the physician should give special attention to preventing the spread of contagion. In some cases this may be accomplished by strict attention to cleanliness, change of clothing and the use of antiseptics. To prevent re-absorption great cleanliness and such antiseptics as bichloride of mercury, chlorate of potassium, sulphite of sodium and dilute sulphurous acid should be employed.

In diphtheria the contagious property seems to be developed more by the intensity of the disease than by devitalization of tissue and putrescence, and it is always well to use extra precautions when the febrile action and local inflammation are intense. But here as in puerperal fever a specific infection is generated at the point of local disease, and is readily communicable to others. This is so marked that the diphtheritic deposit is readily inoculable, not only in the throat, but on almost every abraded surface.

The knowledge of these facts will not only cause us to guard against the general conditions of contagion, as in the other cases, but especially against the transmission of the local infection by coming in immediate contact with the patient and inhaling the breath, the use of towels, handkerchiefs, before they have been thoroughly purified by boiling, and especially the use of probangs, swabs, or surgical instruments that have been employed on a diphtheritic patient.

A treatment based upon the specific indications for remedies has given the most satisfactory results in diphtheria. Aconite, phytolacca, echinacea and bichromate of potassium are the remedies most frequently indicated. The antitoxin treatment is approved by the larger part of the medical profession, and in many cases has proved of great value. Lobelia hypodermically employed has also given good results in many severe cases.

In cerebro-spinal meningitis we have a double element of contagion—the generation of the infectious material by the intensity of the disease and by loss of life in tissues and putrescence. All possible means should be employed, both to prevent the spread of contagion and to protect the patient against the poison generated in his own body.

Asiatic cholera might be studied in the class of epidemic diseases, as in the seasons of its prevalence there is a marked epidemic influence, that shows itself in other diseases as well as this. But though we recognize this, the evidence that it is propagated by a specific contagion is too well proven to allow us to neglect it. Cholera advances on lines of travel, and renews its strength as it goes, going with people, being propagated by and in people. Gaining strength and virulence by special combination of circumstances in its native country, India, it takes passage by steamship to Europe, from Europe to America, where it is distributed by railroad, steamboat and every other means of transit.

It is probable that the infectious poison is found principally in the excretions, and mainly in the dejections from the bowels, and the disease is especially propagated from them. If so, it points the physician to the necessity of especial care in the removal of the dejections, and that they be so disposed of as not to endanger others, either by their exhalations, or by contaminating the water supply.

The diagnosis of cholera is made by the great exhaustion which accompanies the first discharges, the evidence of imperfect circulation and aëration of the blood, as seen in the bluish discoloration of the extremities, want of color in the feces, marked enfeeblement of the circulation and lowered temperature; and by the excessive thirst, nausea and vomiting and muscular cramps.

Typhoid fever, and acute diseases assuming *typhoid symptoms,* usually possess the contagious element in slight degree. Yet in some cases we observe a remarkable development of this character which demands the attention of the physician. Typhoid is generally thought to mean asthenia, but it is better to think of it as having reference to sepsis of the blood. With the condition of sepsis, comes the property of contagion, and under some circumstances this becomes marked. Diseases called typhoid will usually be found to develop the character of contagion, both from intensity of disease and from impairment of the life of tissue and putrescence. The most marked cases are those in which there is great nervous excitation, tense tissues, high temperature, and the sensations of pungent heat when the hand is applied to the surface. The other cases are distinguished by a peculiar sweetish, cadaveric odor of breath, dark fetid feces, and fetor of urine.

Typhus fever is markedly contagious, and may be wholly propagated by a specific contagion generated during the progress of the disease, and thrown off in the excretions from the bowels, kidneys, skin and lungs. It has been noticed that here intensity of disease, marked by great febrile excitement, was more likely to develop the contagious element than the condition commonly known as putrescence.

Yellow fever is undoubtedly contagious in degree, sometimes very markedly, and at others so as to exert but little influence. Both conditions of contagion have been noticed; that from great intensity of disease and from putrescency appearing in the last stage with the black vomit.

Endemic Diseases.

The cause of endemic diseases is evidently a local one, and in many cases it may be discovered and removed or avoided.

These diseases have a definite and distinctive expression, which should and may suggest the means of cure. In some the endemic influence is so wholly the cause, and the endemic expression so clearly indicates the lesion, that remedies will be remarkable for their curative influence. At other times the endemic influence, and diseases produced, will be but a part of the wrong, and whilst the endemic remedies are important, they are not so certain as before, and have to be aided by other means.

The diagnosis of endemic disease is usually very easily made, as there is something distinct and special in the expression of disease, and there are a number of cases showing these special features. They are also restricted to definite localities.

First among the diseases included in this classification are all those showing *periodicity,* including intermittent, remittent, and yellow fevers. Following these, we find that an endemic influence may give rise to the series of continued fevers, to all inflammations, and to many functional and structurel diseases. And it is to be noticed that, as a rule, the endemic influence intensifies the natural disease in addition to giving it special features.

Whatever may be the cause of periodicity in disease, the fact is sufficiently tangible, easily recognized by the periodic expression, which indicates a special pathological condition, and calls for a special group of remedies, antiperiodics—quinine and other drugs of similar action. As before remarked, the periodic ele-

ment may serve as a basis of nearly every named disease, which will be cured by one remedy, quinine. Or it may only be a complication or part of the disease, and quinine will only be one of the remedies called for. But periodicity does not always mean quinine, and it is sometimes difficult to determine whether it does or not. All diseases are periodic to a certain extent, having periods of increase and diminution, as may be noticed even in the fevers called continued. Indeed, all the functions of life, both in health and disease, have something of periodicity in their performance.

The diagnosis of periodicity is usually made clear by the marked remission or intermission of the evidences of disease, and a partial or complete return to the healthy standard of life; the equally marked exacerbation of disease, especially with reference to the wrongs of innervation, temperature and circulation; the disposition to continue such functional aberrations without change of structure, and the fact that such disease is endemic in the locality.

Intermittent fever is made apparent by a marked cold stage, followed by a hot stage and a sweating stage—all occupying a comparatively short time, usually less than twenty-four hours; and then a more or less complete intermission of the disease and return of normal functional activity.

If the intermission is complete, with normal temperature, normal circulation, innervation and secretion, quinine will be the remedy. If functional wrongs should persist during the intermission, appropriate means should be employed for their removal, and the quinine given if the disease persists.

Remittent fever is made clear when there is a forming stage, of more or less duration, and which is frequently attended by gastric disturbance and frontal pain; a chill, not nearly so intense as in intermittent fever, but well marked, and a hot stage which is distinctly broken up into remissions and exacerbations, and continues to the sweating stage, which is the termination of the disease.

The distinct remissions and exacerbations—periodicity—means quinine, and in some cases this remedy will be sufficient to arrest the entire series of morbid processes. This condition will be known by the soft and open pulse, the moist and cleaning tongue, the soft and moist skin, and a return of normal innerva-

tion—at the remissions. If these conditions do not appear, the character of the wrongs must be determined and the means necessary to remove them employed.

Yellow fever cannot prevail in unfavorable situations (it is said never to prevail at altitudes of more than four hundred feet above the ocean), and just in proportion as the local influences favor it, the disease will be severe and fatal. Bad drainage and want of cleanliness are especially noted as likely to favor the propagation of yellow fever.

The diagnosis of yellow fever is made by the marked chill attended by lumbar and frontal pain, nausea and vomiting; the rapid accession of the hot stage, which is very intense, lasting from twenty-four to seventy-two hours; the abatement of febrile action, but with marked prostration, and gradually increasing yellowness of skin; and the return of nausea and vomiting—the black vomit.

Next to periodicity, the most frequent and marked endemic influence is that which gives the typhoid character to fever. It may produce typhoid fever with disease of Peyer's glands, may cause typhoid symptoms in remittent fever, and all the inflammations. A very common manifestation of the influence is in dysentery and pneumonia. The local cause is evidently decomposition of vegetable and animal matter, the products being thrown off into the air and inhaled, absorbed by food, or infecting the water supply. As it is possible to remove such causes, the physician should always direct attention to them in these cases, that they may be removed.

Using the word typhoid as an adjective to designate a condition of disease, it has reference to the condition of sepsis and putrefaction. The enfeeblement or asthenia is but an incident, and is sometimes not noticed until a late stage, though the typhoid symptoms are marked.

The diagnosis is best made by examining the exudations or secretions. It is especially marked in the mouth; on the tongue by *dirty* coating, or a fur that assumes a brownish tinge and gradually becomes deeper until it is almost black; dirty or dark sordes upon the teeth; unpleasant, dark and offensive feces; urine that is frothy, and gives an unpleasant cadaveric odor. We also notice it in the sense of pungent heat when the hand is applied to the surface, and in the low delirium. In surgical diseases, the

discharge from wounds or injuries, or operations, will show it, in a wrong of the pus, which becomes thin, ichorous, fetid, and in a tendency to softening of tissues and sloughing.

This condition suggests the use of remedies known as antiseptic, especially echinacea, sulphite of sodium, sulphurous acid, chlorate of potassium, hydrochloric acid and baptisia, to be selected according to their specific indications.

We also find special expressions of disease, when endemic, that indicate special remedies, and these prove curative. As in the case of epidemic influence, we find that these symptoms are common to many or nearly all diseases of the season or year, and the remedy indicated assumes a very prominent place in treatment. Thus all the remedies named as being indicated in epidemics, are found indicated when the cause is endemic.

Thus we sometimes find an erysipelas, puerperal fever, or dysentery, that is clearly endemic, and the special indications for remedies will be distinct. We want iron, veratrum, rhus, podophyllin, etc., and the indications are so direct and positive that a cure is certain and speedy.

Sporadic Disease.

In this last class we find no special expression of disease, or, in other words, we find the regular succession of symptoms as given by authorities. The causes are in the acts or indiscretions of the individual, in exposure to heat, cold, wet; want of proper clothing or protection; intemperance in eating and drinking; over-exertion, physical or mental—and the reverse, a want of exercise. Or the cause may be found in the general conditions of life; sudden changes of temperature; more or less moisture in the atmosphere; and a greater or less electrical condition.

These causes are temporary and avoidable, and it is well to study them in relation to disease. Whilst a man may not escape an epidemic, contagious, or endemic cause, right living will usually prevent the class of diseases called sporadic.

It is also well to notice that these diseases are usually simple in their structure, and very amenable to remedies. If we determine which is the *first* wrong of function, and right it, we will have but little trouble in treatment. A sporadic fever yields readily to the special sedatives—agents that rectify the wrongs of the circulation; or at farthest will need but the help of those

which increase secretion. An inflammation readily yields to the general sedatives, and those which remove the irritation of the part. The important points to determine in these cases are—the character of the general disease, and the remedies which will right it; the situation and character of the local disease, and the remedies that will influence the part, and influence it in a right direction.

General and Local Disease.

This would seem to be a very simple and profitable classification, both in determining the character and gravity of disease, and in selecting remedies. Yet when we come to the bedside we find it very difficult to make the diagnosis. Disease may be so uniformly distributed, that it is impossible to say that one part suffers more than another, or it may be so localized and restricted to a part that its general influence is hardly noticed. Yet in most cases we will find the two associated together. It is difficult to find a person so uniformly constructed that there is not some weaker part, and in disease which otherwise would be general, this weaker part suffers. There is no part so disconnected with the organism as a whole, that can suffer disease without influencing the body at large.

Though the body, so varied in function, is one, yet it is of advantage to think of disease as being general and local (in principal part) and associate with these ideas thoughts of general and local remedies. To get a fair conception of the elements of general disease it is well to think of those functions which are common to the entire man, or which are equally necessary in their results to the entire man. And to get a fair conception of local disease, we study the function of each part, in so far as it can be dissevered from the life in its totality. We might make a group of elements of general disease somewhat as follows:

- Force.....
  - Formative—for organization
  - Heat
  - Electricity
  - } Conditions of life and motion
- The Blood.
  - In its circulation...
    - Increased
    - Diminished
    - Wrong in kind
  - In its organization
    - With reference to nutrition, to degenerations, deposits and growths
  - Influenced by.....
    - Retained excreta
    - Malaria
    - Zymotic poisons
    - Specific poisons

The Respiratory Function..... { For the supply of oxygen / For the removal of carbonic acid / As an aid to the circulation

Innervation { From the sympathetic, co-ordinating the vegetative process / From the spinal cord, as influencing the automatic function / From the brain { Reason / Emotion / Volition / Sensation }

It is not necessary to consider each of these in this place, but having them grouped before the eye, the mind can analyze each one as a factor of disease, and combine them in natural groups, as usually seen. The mind not only recognizes them as general elements of disease, but will soon learn to recognize the common expressions of wrong, according to the classification of *excess, defect* and *perversion.* And it will soon go further than this, recognizing remedies which reach each individual element, and do that necessary to be done—opposing the morbid action and influencing the function toward the normal standard. If there is an excess—above, the influence is to bring *down* to a standard of health. If there is a defect—below, the influence is to elevate or bring *up* to the normal standard. And if there is a perversion —a departure from, the influence is to bring *back* to the normal standard.

We have already noticed that none of these elements of general disease can exist without producing more or less local disease, and we may also say without influencing the entire series named. With reference to local disease, we find it severe and destructive in proportion to the severity of the general lesions. So, too, we find that the influence of some of these elements of disease sets up a series of lesions which are severe in proportion to the severity of the original one. In both cases general remedies are most important, and in so far as they rectify wrongs, and restore normal structure and function, they are most important.

In some cases the general lesion determines the character of the local one. This is especially the case when the general lesion is of the blood, giving cacoplastic or aplastic deposits. An inflammation may spring up, simple in its character, from the common causes, and if there had been no wrong of the blood, it would have readily passed away by resolution. Yet, there being cacoplastic material in the blood, this is thrown out as an exudation, and, breaking down, causes most serious destruction of tis-

sue. If in such cases as this the character of the general lesion were recognized early, and proper means employed to remove the imperfect material by way of the excretory organs, and so improve digestion and blood making as to prevent its renewal, the local lesion would be less severe and destructive. In place of a "white swelling," or "morbus coxarius," the inflammation would run its regular course of six to nine days to resolution.

If we take the case of phthisis pulmonalis, we find another good example. Say there was an original want of *formative force,* and in consequence there is continuously produced an imperfect material in the blood. Its deposit in the lungs comes whenever from any cause excretion is arrested, preventing its normal removal, and when an irritation of and determination of blood to the lungs is set up—the material being carried to the lungs and there excreted. In this case a rational practice of medicine looks first to an increase of formative force, getting thereby a better blood, better tissues, and a stronger life. When the disease has once developed itself, the treatment will, of course, look to the establishment of the processes of combustion and excretion—removing the material from the blood in this way—and the arrest of irritation of the lungs, which is the cause of the deposit there.

If we take the single factor, *heat,* as the example, we find the very same state of affairs. If, for instance, we have the lesion of the blood known as "typhoid," we find that its increase is in proportion to the wrong of the temperature. If we have an inflammation of the lungs, the local disease is destructive in proportion to the increase of temperature. If we have a phthisis pulmonalis, the deposit is rapid in proportion as the temperature is high, and the destruction of lung tissue is in the same ratio. We say, therefore, that diagnosis by the body thermometer must suggest a class of general remedies, which will prove efficient in modifying and arresting general and local disease.

There is no doubt but that lesions of excess and defect of electricity, as a condition of life, and as a force, have a similar influence upon disease. *Plus* electricity, and we have increased disease by excitation; *minus* electricity, and we have increased disease by want of excitation. The diagnosis will be formed in most cases by the degree of excitation as manifested by expression, and the proper remedies will suggest themselves to relieve

the body of its superabundance, or to employ means which will add to or prevent its waste.

When we study the circulation of the blood as a factor in disease, we see how marked the influence of one of these general wrongs is. Given a lesion of frequency in movement only, and we find that any morbid process is increased in proportion. Secretion is arrested, the appetite is lost, blood making and nutrition are impaired, waste is interfered with, and every cause of disease intensified. Wrongs in the circulation other than frequency give the same results. Even an unequal circulation of the blood may lead to such serious impairment of function as to be a cause of death. Evidently the diagnosis of these general wrongs, and the use of remedies to reach them, are of prime importance.

When we study the influence of lesions of the circulation upon local disease, we find them playing the same important rôle. If you have a local disease, inflammatory or otherwise, it will be to a considerable extent severe and destructive in proportion to the lesion of the circulation. If we have an inflammation of the lungs, it will be severe in proportion to the frequency and wrong in the circulation. With a pulse of 100 beats per minute, and free, there is little danger; but with a pulse of 130, small and sharp, there is most serious danger. If in such case, the lesion of the circulation can be removed, the local disease will be modified in proportion.

Continuing on with this classification, attention might be called to the next group—the blood influenced by certain causes of disease. Take first retained excreta, and we have a most excellent example of the need of diagnosis by this classification. We are treating an injury, a wound for instance, and everything progresses well, until from some cause one or more secretions are arrested. At once we see a change in the local disease, the part suffers, its temperature rises, becomes painful, the process of repair stops, the exudation is changed in character, the pus is unpleasant, and finally the repair accomplished is broken down, and it may be the part sloughs. Surely it is well to be able to recognize this wrong, and bring such means to bear as will re-establish waste and excretion.

Or a person from some common cause may have a simple fever. At first there are no unfavorable symptoms, and we reasonably expect a speedy convalescence, but from some cause

there is arrest of secretion, which is retained in the blood. All the febrile symptoms are increased, and in addition we notice in the brown tongue, sordes, etc., the evidence of sepsis of the blood. Here it is well to recognize the importance of this general element of disease, and by early recognition prevent the unpleasant consequences named.

Malaria has played a most important part in disease, and the reader will at once recognize its importance. Given a case of disease, most simple in form, seemingly, and with this element characterized by periodictiy, the disease may go on from bad to worse, until, possibly, death results. It does not make much difference whether it is a fever, an inflammation, or some other disease. If we take inflammation of the lungs, the recognition or non-recognition of this element of disease (periodicity) may be that upon which the life of the patient depends. Without remedies directed to this special element, the disease goes on to destruction of the lung tissue. With quinine properly administered, it runs a brief course, and terminates in resolution.

The influence of zymosis is well illustrated by erysipelas. You notice the swollen, red, and glistening spot on the skin, and as the patient complains of the peculiar burning, you call it erysipelas. If your attention is not called to the element, zymosis, by the peculiar tongue, pulse, condition of innervation, etc., and you prescribe empirically at a local inflammation, you may lose your patient. Recognizing the zymotic character of the disease, and prescribing proper remedies for this, the patient gets along well.

Dysentery is another excellent example of this. In the minor sporadic cases, a few small doses of castor oil, or some mild laxative, may serve the purpose, and the sufferer gets well after a time. But do not trust zymotic dysentery to this treatment. Here the wrong of the blood, causing typhoid symptoms, is the principal factor of the disease and the element of danger. It is to be met by specific epidemic remedies, or those which we class as antizymotic or antiseptic.

We get a practical example of these lesions in the case of syphilis. A man finds a small sore on his penis, which as yet has given him no annoyance, and if he has no experience with such things, he would expect it to disappear as rapidly as it came. But as days go by, it gets larger, and seems more prominent, and after a time comes skin disease, sore throat, falling of the hair,

iritis, nodes, etc. Surely there is something more than a simple abrasion here. Supposing the physician should only recognize it as a sore, ignoring the specific poison of syphilis, what would be the success of treatment? And yet he could do this with quite as much credit as to fail in recognizing the specific wrongs in zymotic dysentery, in typhoid fever, in smallpox, in scarlet fever, or in measles.

If we study the function of respiration in its influence upon processes of disease, we reach the same results. With wrong respiration, every other wrong is intensified; with right respiration, ameliorated. There is such a thing as too much oxygen, and consequently increased burning and excitement, just as there is such a thing as blood loaded with carbonic acid gas, and so burdened that the varied functions of the body cannot be properly performed. Surely it is worth our while to endeavor to diagnose these conditions, and to employ remedies which directly reach the wrongs and remove them.

When we study the lesions of innervation, we are impressed with their influence upon all parts of the body, and the necessity of directing the mind to them in all forms of disease for the purpose of diagnosis. Whether our senses will detect a lesion, frequently depends upon our method of thinking.

If we study thoroughly the physiology of the *sympathetic* nervous system, and get correct ideas of its controlling influence over all the functions of vegetative life, we will always direct our observation to those expressions of disease which give information with regard to this. Remedies influencing disease through the sympathetic are among our most important therapeutic agents, and fortunately the expressions of disease are quite clear. If we commence with the lesions of the circulation—frequency of pulse, change in its character—lesions of temperature, change in the condition of the skin, some changes in muscular expression, change in the respiratory function, we will find a group of symptoms that are distinct and expressive, and so closely associated with individual remedies, that *the* remedy is at once suggested by the symptoms.

The influence of lesions of *spinal innervation* is well shown in many cases of chronic disease, where "spinal irritation" is a complication. A disease of the digestive or urinary apparatus may seem quite clear and simple—one that remedies will readily reach,

and yet when we prescribe them, there is continued failure. We have failed to recognize a "spinal irritation," but from this wrong of innervation, the local disease is continuously kept up. If the special wrong is diagnosed, and proper means used for its relief, the remedies which had before failed with the local disease are more speedily successful.

We get another good example of this in some cases of continued fever, and other low forms of disease. A patient is doing well enough, other than he cannot sleep from difficulty of respiration. When awake the respiratory function is carried on by the influence of the will, but when this is in abeyance, the automatic function of the spinal cord is not sufficient. Unless this wrong is recognized, and means employed to rectify the wrong of spinal innervation, the patient will probably die. We may get evidence of similar wrong, in one case in retention of urine, in another case of incontinence, in a third in convulsions or muscular wrongs, and in all we are impressed with the importance of remedies that influence the spinal cord, and influence it in the direction of health. It would be most absurd to omit from our diagnosis the evidence of a convulsive tendency, and it would be quite as absurd to omit to look after and recognize any evidence of spinal lesion. The wrong of spinal innervation is often overcome by small doses of nux vomica.

When we study the functions of the brain, we find them exerting similar influences over the body at large, both in health and disease. It will not do to undervalue a right action of the mind, as an element in the recovery of the sick, as it will not do to undervalue a wrong action of the mind in perpetuating disease. Given a mind at ease and restful, and a patient may recover from disease or injury, which, under other circumstances, would most certainly be fatal. So true is this that we should always be on the watch for symptoms shadowing forth the condition of the brain. The querulous voice, the hopeless voice and expression, the unstable voice, the tone of excitation, the tone of prostration, all convey valuable information, which must not be neglected.

We find cases in which an emotional wrong may originate or so intensify processes of disease as to endanger life. A very familiar example of this is found in nostalgia, or "home-sickness." In the Civil War in the United States it was found that this so

influenced disease in the hospitals, at times, as to double the mortality; indeed, many times a furlough to go home was the only reprieve from death.

"Hope *is* an anchor" for many wearied and suffering souls, binding them to this world, lightening their suffering, and giving increased strength for recovery. The want of hope is one of the most serious things we have to contend with in disease. To give hope to the sick is one of the many duties of the physician.

It is possible that some may give little credence to the statements regarding the influence of the emotions in disease. And yet every one practicing medicine for some years will have seen the influence of love, fear, anger, grief, etc., so clearly manifested, that there can be no mistake in the matter. Grief is sometimes so profound that every function of life is seriously impaired, and unless the current of thought can be changed there is danger to reason or life.

Every physician in active practice has realized the influence of the will upon disease, and every one will wish to know the condition of this function in serious or protracted disease. The evidence of a strong will, and determination to get well, is a real encouragement to the physician, as the want of will in this direction is a great discouragement. If we recognize a want of volition in severe or protracted disease, we do all we can to call it out and strengthen it, and in so far as we do this our patient is benefited. Even in the treatment of a cough we find this is important. If the patient can be impressed with the importance of controlling the cough by the will, we will find it much easier to check it.

Physicians are always awake to wrongs of sensation, though frequently the only idea that follows is the use of means to obtund the sensibility of the brain. It is true that unpleasant sensations or pain intensify processes of disease, and wrong the entire body by depriving it of necessary rest, yet many times far less harm comes from this than we would suppose. Indeed, in the larger number of cases it is better that the patients suffer pain, than that they be relieved by the ordinary narcotics. If by the study of pain we can select a remedy for disease, then it becomes valuable evidence. A remedy in this case looks not so much to the removal of the pain, as the arrest of the disease of which pain is a symptom.

The study of *local disease* becomes important in that it directs the mind to limited parts and functions, and thus specializes the wrong. We group the most important functions of the body, as of digestion, circulation, respiration, excretion, etc., and then study each particular organ or part. If we take digestion, we study the function in the mouth, the stomach, the large and small intestine, and as influenced by liver, pancreas, etc. If a certain group of organs or parts do a particular work, we will find diseases of it announced by wrongs of that work. Thus the wrongs of function point us to the locality of the lesion, and a closer examination determines the particular part or organ involved.

Knowing the lesion of function, we readily determine its influence upon the life in its totality, and upon other parts and functions. It is possible in some cases to provide against these influences, by calling into action other functions which may be supplementary or vicarious.

We have similar examples in the relation between the excretory organs—kidneys, skin and bowels. If the function of one is impaired, or there are special reasons why one organ should have rest, we call upon one or both the others to do additional work. In some of these cases the vicarious action will free the blood from noxious materials and thus give a chance for recovery. In others, the relief of the part from work gives an organ opportunity to recover its normal condition by improved nutrition.

In the study of local disease we not only have in mind the influence of changed function, but also that which may arise from a change in the circulation, innervation, and nutrition of a part. We cannot have an excess of blood in a part without depriving some other part of blood. We cannot have a too rapid circulation in a part, without influencing the circulation at large. We cannot have an arrest of circulation in a part without impairment of that blood, and a wrong to the whole of this fluid. We cannot have a wrong of innervation of a part, without suffering of the nerve centers and a reaction upon the body at large; as we cannot have a wrong of nutrition, or waste, without general suffering from it.

As the mind grasps these varied factors of disease, it is better able to appreciate the present condition, and provide against

other phases of disease. We not only want to know the condition of disease at the present time, but we also wish to know, from this, what will be the probable condition to-morrow, or some subsequent time. If to-day we can arrest the wrongs of life now present, and turn the tide toward the standard of health, well. If not, we wish to make provision, so far as we can, against the wrongs which are likely to appear in the near future.

CHAPTER V.

METHODS OF DIAGNOSIS.

IN studying the form of diagnosis to which we are now giving our attention, this question naturally arises: How are we to find the expressions of disease? The question is easily answered when we remember that man has knowledge of things external to him, by means of the general sense of touch, and the special senses—sight, hearing and smell. We may ask, then, when brought in contact with the sick, what do *we* feel, see, hear and smell, that differs from the normal condition—health. What the patient feels, sees, hears and smells is not so important, for his senses are impaired by disease; they have never been educated, and his mind is not in a good condition to receive impressions.

There must be great uncertainty in a diagnosis made from what a patient says, and yet it is a too common means of diagnosis with all schools of medicine. If patients were wholly truthful there would be sufficient uncertainty, for they have little knowledge of disease, little skill in observation, and from disease they are incapacitated for reasoning. The patient cannot, in the very nature of the case, know very much of his disease. It is, therefore, unwise to believe anything that one is told in a sick-room unless it can be corroborated by an examination of the patient. Take a patient who is imaginative, and by leading questions and promptings you can get the symptoms of every ailment to which man is subject; and the story will have more consistence and semblance of truth, the more the patient knows of disease. The nurse is frequently as bad as the patient in this respect, and quite as easily led to exaggeration.

A good physician has better success in diseases of children

than in other diseases, for the very reason that he uses *his* senses, and prescribes for children from what *he* knows, instead of taking the say-so of patient or nurse as a basis for his treatment.

In order to get a good basis for diagnosis and prescription in diseases of the adult, we must suppose every patient a child—which they are in fact, so far as medicine is concerned—and give them the same careful examination that we would to the child, and thus reach conclusions from what we know rather than from what patients or nurses say.

We do not wish to lose the advantage of any information we may get from patients or nurses, for there are some things the patient will know, and a little care will frame the questions so as to get at the real facts. There are some things the friends or nurse will know, and direct questions will usually bring straight replies. But there are many things that neither can know anything about, at least with any certainty, and these should always be avoided.

All answers should pass in review of our own senses, and what we know of health and disease. These are the judges, and if the evidence is good it will have their approval; if it does not have their approval we throw it to one side. We do not purpose receiving anything that is opposed to what we know of disease, and we do not purpose believing anything that is opposed to the evidence of our senses.

In order to employ our senses successfully, however, we must know what expressions of disease are to be discovered by the sense of touch, by the sense of sight, by the sense of hearing, and by the sense of smell. In other chapters the various disease expressions will be so presented as to make them easily recognized by these senses.

CHAPTER VI.

DIAGNOSIS FROM A PHYSIOLOGICAL STANDARD.

In this chapter it is proposed to examine the various functions of the body, setting up a physiological standard—health—and measuring from it. We find that all lesions can be grouped under three heads of—*excess, defect* and *perversion*—above, below, from. If once we are able to recognize these departures,

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and have a knowledge of the action of remedies upon function, we may make a rational selection. If the condition of disease is "above" the normal standard, we employ those means which will bring it down. If the condition of disease is "below" the normal standard, we employ those means which will bring it up. If the condition of disease is a departure "from" the normal standard, we employ those means which will bring it back.

The reader will notice that it makes no difference what "school" of remedies is prescribed from, as it is quite as well adapted to the one as another. Take the large dose of some practitioners, and the physician using it should know the locality of its action, and the quality of its action. And even when the action is secondary or indirect, this method of prescribing is still good, for the mind associates the secondary influence upon a part or function with what needs to be done to restore health. If the modern Eclectic prescribes the usual dose of specific medicine, he has clearly in view its direct action upon a part or function, and he associates the action of the drug with that which needs be done to oppose disease and restore health. Our Homeopathic brother, with his minute doses, frequently prescribes on the same basis. He knows *where* the disease is, and he prescribes a remedy which specially influences *that* part; he knows the character of the disease, and he prescribes remedies which his experience has shown oppose the disease, and favor the return of health.

Having thus shown the advantage of this study, as being applicable to all systems of therapeutics, and even adapting itself to each individual expression, it may be well to call attention to its value as a training for the mind, and a study of the phenomena of life. "Thinking in straight lines" has been our motto, and most certainly this is such method of thought. As we educate the mind, so it will do our work, and this is one of the best studies. This is a study of life in all its phases. It is a study of normal life, for without this it has no basis. And it is also a critical study of wrong life in all its phases, for this is its end.

It may be well to call attention again to the too commonly received methods of examination and diagnosis—direct and by exclusion. In direct diagnosis the symptoms are marked and point directly to the locality and character of the wrong. But in some cases there are no such direct symptoms, and we proceed to make an analysis of the life before us, questioning each

particular part or function, until we have found the seat and the quality of the lesion. This is diagnosis by exclusion.

Formative Force.

The force of organization is received by inheritance, and the rule reads—as is this force in the parents, so will be its manifestation in the children. Thus it is sometimes an important element in diagnosis to know the parentage, and, in so far as we can, their physical history. From feeble parents we usually expect feeble children. From parents who have had an imperfect organization, and wrongs of blood, degenerations, deposits and growths, we expect children with like imperfect organization, and with the same tendency to disease. If we know that parents have died of phthisis pulmonalis, or other tubercular disease, a cough or articular irritation has a deeper signification, and we are wide awake to the necessity of early means for protection.

If parents or near relations have had cancer, we view with suspicion any growth that may make its appearance. If they have suffered with Bright's disease, diabetes, epilepsy, insanity, or other similar disease, we are advantaged by knowing the facts.

The force of organization is very rarely in *excess*, probably never, as regards the whole man. Once in a while we notice examples of it as affecting parts. Thus we may have hypertrophy of the adipose tissue; hypertrophy of the bone; of the epithelium; of cellular tissue, taking the form of growths. All of these will be readily recognized, though it is not so easy to find remedies which will arrest or modify the condition. Still, bearing in mind the distinction between the unknown and the unknowable, we may expect to find remedies for even such wrongs as these.

The wrong of *defect* is very common, and met with in many cases of disease. We recognize it in defective or feeble nutrition, parts being small, wanting normal solidity, and lacking the usual capacity of our standard man. The functional activity is usually the measure of the force of organization; for though the organism in such case may for a limited time give a large amount of work, it is rapidly exhausted, and requires much more than the usual time for recovery.

We may learn that such defect is inherited; that it is the

result of bad conditions of life; that it results from overwork, or is caused by disease. Whilst we cannot rectify the present wrong of inheritance, we can provide to a certain extent against this in the children of the future. But in the other cases the treatment is quite plain—we rectify the conditions of life and make them healthful; we prevent overwork and remove such diseases as influence nutrition. Following this we observe the great law of development—"as a part or function is rightly used, it gains size and capacity." As we exert the force of organization, we call into right action that which the person has, and as it is thus normally used, it grows.

Heat.

The normal temperature of the human body is 98° and a fraction, say 98.4°. To have healthy life this must be maintained, with but very slight variation, even the change of one degree producing disease. The temperature is accurately determined by the body thermometer, applied in the axillæ or under the tongue.

Excess of temperature is met with in fevers, inflammatory diseases, and most diseases accompanied with change of structure. As a rule, the excess of temperature is associated with corresponding frequency of pulse, frequent respiration, arrest of excretion, digestion and nutrition. In proportion to the excess of temperature is the activity of causes of disease, of wrongs of the blood, and the tendency to destruction in local disease. Thus, to a certain extent, the excess of temperature which we can measure so accurately, becomes a means of diagnosing all the wrongs of life.

The saving feature is the diurnal variations in the range of temperature. Though in protracted disease it may reach the height of 105° to 107°, at some period of the day, it falls to 103°, to 102° at others, and in this fall of temperature the person has a promise for the maintenance of life. When the high temperature is maintained throughout the twenty-four hours, the disease is necessarily of short duration, either in a fall of temperature and return to health, or in death.

Excess of temperature calls for remedies which lessen the processes of combustion, and provide for the better removal of heat. Wrongs of sympathetic innervation (excitement) are as-

sociated with excess of temperature, and here rhus, bryonia, gelsemium, lobelia, etc., become remedies. Excitation of the brain and spinal cord is associated with excess of temperature, and when noticed calls for remedies which relieve such excitation. Lesions of the blood, especially those of a septic or zymotic character, are associated with excess of temperature, and anti-zymotic remedies are suggested in these cases.

The skin is the regulator of the temperature of the body. In the continued evaporation from the surface, excess of heat is removed. With a high range of temperature the function of the skin is impaired, and transpiration more or less arrested. Among the serviceable means to remove the excess of heat, are those that put the skin in better condition, favoring transpiration. Among these means, baths hold a prominent place, and should not be neglected.

Excess of temperature is quite as important a factor in chronic as in acute disease, and its recognition is an important element in diagnosis. Whatever may be the wrong, a range of temperature of 100° and over means a continuation of the disease, and, eventually, a destruction of life. On the contrary, amendment is always preceded or associated with a fall of temperature, and if this is maintained at the standard of 98°, we may expect recovery. Thus, in phthisis pulmonalis, the range of temperature is over 100° even in the first stage, and if maintained at this recovery is impossible. If it can be reduced, and held permanently at or near the normal standard, the patient will improve.

There seem to be three factors in this high range of temperature which require study—the frequency of circulation, a wrong in combustion, and a defect in the means for regulating the temperature. In some cases remedies directed to the wrong of circulation are most efficient, as when we employ veratrum, digitalis, cactus, lycopus, etc. In others the wrong is of combustion, either in a deficiency of some element of the blood, or in an undue excitation of the nerves governing the respiratory function. For the first we think of cod-liver oil, the hypophosphites, sulphur, and appropriate foods. For the second arsenic, phosphorus, rhus, bryonia, belladonna, lobelia, etc. In the third the lesion of the skin is prominent, and calls for such means as will restore normal functional activity. It may be the use of baths—alkaline,

acid, stimulant, tonic, astringent, inunction—or the use of internal remedies that specially influence this organ.

Deficiency in temperature is less frequently met with, and not so easily diagnosed. If the thermometer in axillæ or under the tongue shows 98°, but there is coldness of the extremities and surface, showing in some places not more than 90°, we have determined our case. Or possibly we may find that the normal condition of heat, 98°, can be maintained in a state of rest, but there is little surplus for motion—we have heat as a condition of life, but not as a force. In the last class of cases, the want of power, with exhaustion and lowered temperature after exertion, tells the story.

Deficiency of heat may be dependent upon want of calorifacient food, upon wrongs of digestion, upon the want of some special material in the blood to facilitate combustion, upon deficient innervation, upon a wrong of the skin permitting heat to be wasted, and upon an impairment of the respiratory function. In our examination of the sick, the mind at once determines a comprehensive plan of examination, and our inquiries proceed in this regular order—with regard to food, with regard to digestion, with regard to the need of special material for the blood, with regard to innervation, with regard to the condition of the skin, and with regard to the respiratory function. Finding the principal wrong, the mind at once turns to the remedies that influence the part and function, and selects from them the special agent or agents that do that which is needed to bring the part or function back to its normal condition.

Unequal distribution of heat is not quite as important an element of disease as excess or defect, but in some cases plays a not unimportant part. If in long-continued and severe chronic disease we have this unequal temperature—the trunk being too hot, the extremities cold—no means will prove curative until the temperature is equalized. Inequalities of circulation and temperature are very common elements of disease, and recovery in many cases largely depends upon their being rectified.

There are some peculiarities in the temperature that the thermometer will not recognize. For instance, in some cases of zymotic disease, typhoid and typhus fever, protracted disease showing "typhoid" symptoms, the hand placed upon the skin gets a sensation of *pungent* heat, very like that when it is placed

upon a surface reddened with mustard or cantharides. The sensation is very distinctive to most persons, and gives the idea of sepsis, and unnatural irritation of the vegetative nerve centers. There is nothing more certain than this evidence, whenever it is presented, and we are at once awake to the danger to life, and the necessity of means to overcome the morbid process going on in the blood, and to relieve the over-excited nervous system. At once we examine our patient with reference to the indications for the special antiseptic—muriatic acid—the alkaline sulphite, sulphurous acid, chlorate of potassium, echinacea, or baptisia, and with reference to the remedies which influence the nerve centers—aconite, veratrum, rhus, gelsemium, etc.

Nutrition.

In studying the diagnosis of lesions of nutrition, we observe the same order, having clearly before us the factors—food, digestion in mouth, stomach, intestine, the process of blood-making, the circulation, the condition of the tissues with reference to appropriation, and even the adverse side, retrograde metamorphosis. Any one or more of these factors may be wrong, and we desire to so localize it that we can select our remedy with certainty. We must know the exact location and character of the lesion if we are to prescribe with certainty.

Many wrongs of nutrition are dependent upon a want of proper food. In this country, where food is abundant, it is not as frequently the want of food in gross as it is a want of proper selection and preparation.

We not unfrequently find that food is wrong in kind, though it may be good in quality and well prepared. If a man wants animal food, vegetables containing a large proportion of starch will not answer well; if he wants calorifacient food, it does not do to feed him upon beef-tea. Again, we must have regard for the power of appropriation by the individual, who may be able to digest certain varieties of food when he cannot others.

Wrongs of *buccal digestion* are easily diagnosed in the majority of cases by the history given. The patient eats rapidly, "bolting his food," which is not properly chewed or insalivated. Or he may be an habitual tobacco chewer or smoker, and thus by continued abuse of the salivary glands have so changed the character of this secretion that it cannot do its work.

The treatment of such cases is very plain. The patient must be instructed as to the uses of the mouth, and the necessity of amending his bad habits. Abundant time is to be given to each meal, and the food thoroughly masticated.

The wrongs of *stomachic digestion* are frequently announced by unpleasant sensations which the patient refers to the stomach, and points you directly to the seat of the trouble. We have the evidences of indigestion, and a wrong of blood-making and possibly of nutrition, in addition to the localization of unpleasant sensations. Of course, the unpleasantness varies in different cases, and has the entire range between sensations of fullness, weight, heaviness, to the most exquisite pain.

But having thus localized the lesion, we have only to make a commencement, for it is necessary to know its character, and this may be determined in part by the sensations of the patient, and examination of the tongue and the epigastrium, and by the discharges from the stomach. It is possible first to arrange these lesions into two classes—irritative and atonic—and even to make these classes embrace structural lesions. Probably this is the simplest, as it is certainly the best classification, because it points out the remedies required. Remedies influencing the stomach are readily divided into sedative and excitant—the one removing irritation, and the other giving stimulation.

The evidence of irritative lesions is found in uneasiness or pain of a somewhat acute character, tenderness on pressure over the epigastrium, and in many cases by injection of the papillæ of the tongue, especially of the tip and edges, giving the characteristic redness. We have every degree in the intensity of these symptoms, from the slight irritation with determination of blood, to the well-developed inflammation.

With these evidences of disease, the mind at once turns to those remedies which allay irritation—hydrocyanic acid, peach bark, minute doses of aconite, ipecac, rhubarb, bismuth, and some of the simpler stomachic bitters, as hydrastis. If we have the general indications for a group of medicines, we will find it much easier to select the special one which will be most efficient. The reader will notice that these remedies are alike applicable in all cases characterized by irritation and determination of blood, even in cases of severe structural disease.

The evidences of *atony* are impaired circulation and innerva-

tion, and want or perversion of function from this is found in sensations of weight and fullness in the epigastric region, a sense of oppression referred by the patient to the epigastric region. When we examine the patient we find that the expression of the face is dull, the movements listless and show a want of energy. If we examine the tongue we find it full and expressionless, in some cases pitting where it comes in contact with the teeth. As a rule there is increased secretion of mucus, and the bowels are constipated. The symptoms above named point the physician to that class of remedies which are topical excitants to the stomach, and that stimulate a better circulation and innervation. Nux vomica and strychnine may be taken as the type of such stimulants, and are frequently employed when the impairment is temporary. The bitter tonics—stomachic tonics—are the remedies usually selected when the impairment is of longer duration; hydrastis canadensis, gentian, columbo, etc., may be taken as examples of this class. With atony there may be irritability, and in such cases the remedies might be amygdalus persica, or matricaria chamomilla.

Atony with *increased mucous secretion* will be marked by the coated tongue, yellowish or gray, especially toward the base, full and expressionless features, dull eyes, and evidence of oppression. These symptoms suggest a consideration of the properties of kali muriaticum. A mild laxative and saline diuretics may here prove useful.

Excess of gastric juice will usually be known by its eructation, the sense of acidity of stomach, elongated papillæ of the tongue tipped with white, and maldigestion. For it we think of remedies that allay irritation, or that remove diseases of which this is sympathetic, as of bismuth, powdered charcoal, the alkalies, or the acids, as may be indicated by other symptoms.

Deficiency of gastric juice is shown by maldigestion and eructations of undigested food for some hours after eating. It may require stimulants, tonics, acids, alkalies, podophyllin, etc. Recognizing the deficiency, the mind is directed to the cause, and when determined the treatment will be very direct and certain.

Excess of acid is determined by the eructations, and the sense of acidity, but if of the blood as well, it will be shown in pallor of mucous membranes. Whilst the alkalies would seem to be the direct remedies in the treatment of these cases, they are really

curative only where there is evidence of this lesion of the blood. In other cases the cause must be determined. Many times it is a wrong of innervation, and when this is removed the acidity ceases. In some cases, indeed, acids have a more direct influence in effecting a cure than the use of alkalies.

Deficiency of acid may be known by the unpleasant fluid eructations, greasy if fatty matter is taken as food. The general defect will be shown in the deep redness of mucous membranes, and wherever blood comes to the surface.

This is sometimes the cause of serious functional wrong, and until the acid is restored digestion will not be well performed. In these cases we usually think of muriatic acid as the remedy, though in many lactic acid will give the best results.

The symptoms pointing to pepsin as the remedy are not very direct. Indeed, if we should say there was an entire absence of symptoms it would be a better guide to the physician. Given a case in which there is indigestion or enfeebled digestion, and there are neither evidences of irritation nor atony, acidity nor alkalinity, or wrongs of innervation, or disease of which this may be sympathetic, and we would say, give pepsin.

The wrongs of *intestinal digestion* require care in diagnosis, as many of the symptoms are obscure and indirect. The lesions may be classified as in the case of the stomach, into irritative and atonic, and the sensations of the patient, if they are described, will usually lead to a correct conclusion. The pinched expression of face, the loss of adipose tissue, giving a shrunken appearance of the body, the contracted tongue, slick, seemingly divested of papillæ, tell the story of irritation. The atony will be indicated by fullness in the abdomen, with a sense of atony as the hand is passed over it; the full, doughy tongue, inclined to be coated, and the general oppression of the nervous system, give very clear intimations of the character of the lesion.

The irritative condition calls for aconite, ipecac, matricaria, amygdalus, bismuth, the stomachic bitters, epilobium, etc., and they may usually be selected with considerable certainty. The atony calls for nux vomica, chelidonium, podophyllin, etc. In many of these cases the combination of podophyllin in minute doses with one of the simpler bitters, answers an excellent purpose.

As a rule, good *blood-making* follows good digestion, and having secured the one we are not troubled to look after the other, yet sometimes we have the fault here and must rectify it. Good blood-making is dependent upon the conditions already named. There must be a normal temperature, a normal circulation, normal activity in use, normal waste and normal excretion. If there is a wrong of either factor we may expect some degree of wrong in the making of blood and in nutrition. If at any time we suspect this lesion we examine our patient thoroughly with reference to these important functions, and finding the wrong, whatever it may be, we right it.

There may be a want of some particular material in order to make good blood and good tissue. This has been recognized by physicians, and is the basis of that called restorative medication. We have already seen that the physician must select the proper food for his patients, and that much may depend upon giving histogenetic or calorifacient food.

"Restorative medication" is an indefinite term, as used, and may mean remedies that stimulate an appetite, increase digestion, giving of proper food, as well as the use of those agents which add a needed constituent to the blood. It would be better to restrict the term to the use of agents that enter into the formation of the blood and the tissues. We may sum up these as iron, phosphorus, sodium, lime, potassium, sulphur, silica and copper. These may not be all, but if we can get a clear conception of their use, the wrongs that follow their defect, and the symptoms that point them out, we will do well.

As iron is the coloring material of the blood, want of color is generally regarded as indicating the use of this remedy as a restorative. In some cases the evidence is sufficiently clear, and when iron is given the effect is direct and positive. If taking the symptom, "want of color from blood," we are careful in our examination to exclude those cases where other and primary lesions exist, the certainty would be almost absolute. But there is another indication quite as certain as "want of color," when tissues, especially the tongue, show a solid but not deep blue. In these the action of iron is specific. Again, we find certain lesions of the blood, more noticeably those which give an erythematous eruption (erysipelas) in which the redness is dirty or dulled, in which iron is specific.

When the diagnosis is carefully made, the action of iron will give great satisfaction. A recent case of uterine disease of long standing with greatly impaired nutrition, presented as a prominent feature frequent erythematous eruptions of this dirty, though somewhat vivid redness, and the cervix uteri and vaginal tissues presented the same color. Iron, three times a day, was sufficient to effect a cure in a month. In another, where there was impaired nutrition of many years' standing, and no direct symptoms but the solid blue tongue, the patient made a quick and good recovery on iron alone.

The best indication for phosphorus in its varied forms will probably be found in the *want* of expression, both in the face and in movement, an enfeebled respiration and unequal temperature. The sensations of the patient may point to impaired nutrition of the nerve centers, or simply to a general failure of life. The indications for phosphorus in the ordinary dose, are invariably of atony—impairment of the circulation and innervation. In a minute dose it may be used where there are evidences of vascular and nervous excitement with enfeebled tissue—as instanced in low grades of inflammation of the lungs.

Sodium is a true restorative in some conditions of disease. If deficient in quantity every function of life is impaired, and without its restoration recovery cannot take place. In some cases want of sodium is the basic lesion, and its administration all that is necessary for a cure. In others this deficiency is but one of many lesions, and the giving of sodium will be but one of the means employed.

The indication for the use of sodium is clear and unmistakable—want of color in mucous membranes—which are usually full. Usually we are guided by the tongue, and the expression would be *full* and *pallid*—sodium.

The indications for lime are not so distinct, but yet quite definite. We are in the habit of saying that lime is indicated in all idiopathic cases of suppurative disease of cellular tissue. The very fact of inflammation with a low euplastic or cacoplastic deposit, not the result of injury, evidences a peculiar wrong, and for this lime is the remedy. Furuncular disease in all its forms finds a remedy in lime. In the majority of cases, there will be pallor of mucous membranes, though in some cases they will be purplish or blue. Lime is employed in chronic disease of the

lungs, with cacoplastic deposit, determined by a low grade of inflammation.

The indications for potassium will be found in *pallor* of mucous membranes, calling for an alkali, and impairment of muscular power. In most cases a dull, leaden hue of mucous membrane with pallor will point especially to the salts of potassium. A marked example will be found in syphilis, in which this coloration is the indication for iodide of potassium. In some cases a salt of potassium may be needed, even though the deep coloration calls for an acid; this is sometimes seen in scurvy. Here the sodium is excess, potassium is defect, and the patient is cured by the administration of lemon juice and vegetables containing potassium in large quantity.

The best indication for sulphur as a restorative is a change in or want of pigment of the skin and hair. In some cases the dull, dirty color may call for sulphur, in others the blanched surface. Rapid loss of color in the hair will sometimes be an indication. Sulphur is also indicated by a peculiar blue or leaden color of urine and feces. It would be designated by some "want of color," and so there is a marked lack of the natural coloring material of these excretions. The dirty or tawny skin with bluish urine is a good indication for sulphur.

Silica is indicated in ailments attended with pus formation. Whenever pus is found in an inflamed part of connective tissue or skin it may be employed. In some forms of septic infections it is a valuable remedy. It promotes suppuration, and in this way acts efficiently in abscesses. As long as infiltration, which can disappear in no other manner than by suppuration, continues, silica is the indicated remedy, and should be employed until the infiltration has disappeared. In cases where suppuration has ceased to be active, but the process lingers and pus forms chronic depots, small or large, fistulous or otherwise, it is a remedy of curative power. It is also useful in chronic gouty rheumatic affections. It stimulates the connective tissue cells, and aids in throwing off accumulated urates through the lymphatics.

A marked indication for the use of copper is the unpleasant greenish pallor of skin met with in some diseases of women, and a very similar coloration of tongue. In some cases the patient has not lost flesh, and nutrition seems to be quite as good as usual, but there is a want of energy and power of endurance.

The bitter tonics are of value in cases in which the blood requires a bitter principle. In some cases the want of this bitter principle is the cause of serious disease, but at the present time it is not possible to point out any better evidence of the need of bitter tonics than impaired appetite, digestion and nutrition.

A right circulation is essential to carry well-made blood to the tissues where it is to be used. Wrongs of the circulation impair the quality of the blood, and the power of the tissues to withdraw from it the materials for nutrition. Thus in all cases of lesion of nutrition a right circulation must be maintained. In this connection attention may also be called to the necessity of having the normal temperature of 98°, which is a condition of healthy life.

A patient may have good food, good digestion and good blood-making, and yet there will be a failure of nutrition unless the tissues are in condition to appropriate the material and weave it into organic forms. We have no means of determining the condition of formative cells except by the physical properties of the tissues *en masse*. If they have normal hardness, elasticity, form and activity, we have reason to conclude that nutrition is good, in so far as the power of appropriation is concerned. Conversely, we may say, if they lack hardness, elasticity, form and activity, there is a want of power to organize new tissue. Diagnosis is here made by the tactile and visual senses, and will be valuable just in proportion as they have been trained to use.

Concluding from these evidences that the tissues lack the power of appropriation, what will be the remedies? In so far as internal remedies are concerned, we have but few that influence the function of the formative cells. To a limited extent, some of the bitters may do this. Yet when we subtract their topical influence upon the digestive apparatus in increasing the appetite and improving digestion, and the slight stimulant influence upon the circulation and innervation, there is but a small fraction to be accounted for.

Want of hardness, elasticity and activity will show a want of nutrition, whilst the change in form, want of expression—dull and lifeless—may be taken as evidences of a want of retrograde metamorphosis. We have already made reference to the great law of animal life—as an organism is used it gains the power of reproduction and increased use; as it is disused it loses this

power. But it is well not to forget that over-use will impair reproduction, the forces of life being thus exhausted. In many cases, after providing for good food, good digestion, and good blood-making, a good circulation, normal temperature, and good innervation, we stimulate the appropriation of material by the tissues by well-regulated exercise. Or if the patient is overworked, and thus exhausts his powers of reproduction, by recommending rest.

In some cases the patient requires exercise under the influence of the will, innervation in this way being of as much importance as the activity of tissue. In other cases it requires passive movement, with as little expenditure of nervous power as is possible. In some cases the stimulus of electricity becomes an important means, and by its general use normal nutrition of tissues may be obtained.

The character of *deposits* may usually be determined by the symptoms indicating the condition of the general health, and by the local appearance of the part when near the surface. Bearing in mind that good blood will give euplastic deposits, an inferior blood cacoplastic deposits, and a very poor blood aplastic deposits, we will be in a pretty good position to judge.

As regards the local symptoms, we may say that the inflammatory process, regular in its course, is the best evidence of euplastic deposit. All irregularities, whether of time, intensity, or of the common symptoms—heat, pain, redness or swelling—point to a deposit of lower character. So certain is this that the physician will very rarely make a mistake if irregularities cause him to employ greater vigilance. If, for instance, in local disease there is too much or too little heat, too much or too little pain, too much or too little swelling, too much or too little redness, or if the color is changed, we are sure the deposit, if there is one, will be low in character. So if the disease runs its course too rapidly, or progresses too slowly, we conclude that the deposit will be of lower grade. So true is this, that we look with suspicion on all alterations of the inflammatory process, and use extreme care in the treatment of such cases.

Degeneration is not easily recognized, and in a majority of cases it progresses until the destruction is beyond remedy. Of course, granular degenerations of the kidneys (known by albumin in the urine), and degeneration of the liver (known by jaundice),

which present characteristic functional disturbance are not included in this statement. The gradually decreasing power of continued exertion is an important point in the diagnosis. Persons having degeneration will find themselves incapable of prolonged exertion. There is a want of expression in every part, and the soft tissues sit upon the bones like an ill-fitting suit of clothes. A want of sharpness and strength in the wave of blood as it passes under the finger is an additional element.

In the treatment of degenerations we wish to re-establish this "renewal of life." Whilst we want good food, good digestion and blood-making, adding any agents of the class restorative that may be needed, and an active condition of the formative cells, we also want increased retrograde metamorphosis to remove the old and degenerated tissue. In so far as the tissue is degenerated it can never be replaced, but it is possible to so improve the function of nutrition that what yet remains may serve the purpose of the organism.

The diagnosis of *growths* belongs to the province of surgery, and requires but a brief notice here. They are classified as benign and malignant, and to determine to which of these two classes a growth belongs is the first object. As a general rule, we may say a *benign* is a growth from the tissues, whilst a *malignant* is a growth in. A benign growth is distinctly separate from the tissues, and though it may be deeply seated it obtains room for its enlargement by separating them, and occupying the place of the connective tissue. It may interfere with the nutrition and use of tissue by pressure and weight, and in rare cases when inflammatory action is set up may form adhesions to them, otherwise it maintains a distinct and separate existence. On the contrary, a malignant growth takes possession of the tissues of the body and grows in them, transferring the structure into its own lowered forms. It is no respecter of tissue, and occupies one quite as readily as another, taking possession alike of skin, connective cellular tissue, muscle and bones, using the fibrous tissue as its skeleton, and the blood-vessels, lymphatics and nerves for its supply, waste and innervation.

The reader will notice that if in any case it be possible to determine the condition of a growth—from or in—the diagnosis is readily made. A growth that does not interfere with or take possession of tissue, is of necessity benign, whilst a growth that

does appropriate the normal tissues is as surely malignant. In a majority of cases careful inspection of the part will determine this.

A benign growth is generally of uniform consistence, smooth, and of equal elasticity as the hand is passed over it. The reader will readily see why this should be the case, as it has a single point of origin and supply, and consequently a uniform development. But in the case of a malignant growth, its consistence and elasticity will depend to a considerable extent upon the tissues it appropriates, and hence it will be of unequal hardness and elasticity—nodulated.

There is a marked difference in the sensations of the part. The benign growth has no nerves, and any sensation experienced will be from its pressure or dragging upon adjacent parts. The malignant growth appropriates the nerves of the part, and hence interstitial pain of a peculiar character is usually found in these cases.

A benign growth has no lymphatics, and does not influence the blood other than by withdrawing the materials for its supply. On the contrary, the malignant growth appropriates the lymphatics as it does other tissue, and furnishes through them a cancerous lymph which eventually produces the constitutional impairment so generally noticed.

CHAPTER VII.

DIAGNOSIS BY THE SENSE OF SIGHT.

The eye which has been properly trained learns a great deal as it observingly passes over a patient, but the eye which has not been so trained simply sees—it does not know how to obtain the valuable information spread before it. The educated eye requires no prompting to do its work in the examination of the sick. It takes in the appearance of the patient and his surroundings in all their detail. An effort of the will is then required to make the mind attentive, and to co-ordinate the impressions, and reach conclusions from them.

General Symptoms of Disease.

The general appearance of the patient is the first object to be noted. This will tell the probable age and whether the person

being examined is fairly well generally, whether broken down by disease, or how far enfeebled, and give more or less direction to a proper examination.

Valuable suggestions are many times obtained by closely observing the attitude of a person applying for treatment. The patient may be bowed by debility, or by abdominal pain, or spinal disease; or bent to one side in order to give some part of the body rest, as in pleurisy, when the invalid bends to the afflicted side, so as to lessen the friction of the inflamed serous surfaces. There is a great variety of appearances to be observed. There is the pale, thin, cast down and unhappy looking woman with dyspepsia and troubles of various kinds in the reproductive organs, and the panting patient, with raised shoulders, who has chronic bronchitis and emphysema. The lineaments of struma are often distinctly manifested, especially in children, and the snuffles of a syphilitic baby are so characteristic that they cannot well escape the attention of the careful examiner. It is well for the physician to study types as well as marked varieties of disease, and associate with them the parts or tissues involved, always keeping in mind the drugs which influence these parts and tissues and are thus likely to become remedies in all such pathological conditions. When the types of disease have once become thoroughly understood, it will be easy to learn the peculiarities of an individual patient afflicted with any well-marked type. In time the eye learns to recognize a certain type of person with persisting lithiasis, and this will often enable one to comprehend the real meaning of a large number of symptoms and statements which would be otherwise incomprehensible. There is a type common to elderly people which is as well marked as that peculiar to anemic young women. There is a certain attitude and carriage which points out the victim of pulmonary phthisis, and leads one to examine the chest. A consumptive is often exceedingly ingenious and displays great quickness of intellect, but the patient suffering from chronic bronchitis and emphysema, or fatty degeneration of the heart, frequently appears confused and stupid. In chorea the movements usually point to a correct diagnosis, but sometimes the arm is so quiet that it looks as if paralyzed, and, in the latter case, unless the physician is very careful, an incorrect diagnosis may be made. In paralysis agitans the movements of the person are indicative of the changes

in the nervous system. These must not be confounded with the tremor often seen in anemic women who drink tea to excess, or the tremor of the different muscles which tells of excessive use of stimulants and chronic alcoholism.

The physiognomy should be closely observed, as much may be learned from a thoughtful study of the face. The bowed-down look is marked in cerebral anemia, and the depression of melancholia is very apparent, while the excitement of mania, the elation of general paralysis and the worn look of mental worry or anxiety are all plain enough to be readily recognized by the educated eye. The general evidences of nutrition and a well-fed nervous system, usually with a full pulse, when once seen are without difficulty differentiated from the muscular listlessness of malnutrition, with a soft, compressible pulse.

Paralysis may be partial—the hand and arm being fixed—the remains of a former hemiplegia. This condition, however, may be simulated as a result of some accident or affection of the bones, or the patient may have slept with the arm in such a position as to cause severe pressure on the brachial nerve, and thus caused the apparent paralysis.

There are great differences in the attitude and manner of walking caused by different forms of nervous diseases and osseous changes. The walk of a patient suffering from ordinary hemiplegia is decidedly characteristic of the disease. In using the affected leg the toe of the shoe is trailed on the ground, sometimes the outside and sometimes the inside, so that the shoe becomes irregularly worn. Often the shoulder of the opposite side is thrown outward at each step, so as to tilt up the pelvis on the affected side, and thus make it easier to continue the circular movement of the leg. Here the knee action is lost. Frequently the arm of the affected side hangs down rigid with the fingers closed. In paraplegia the feet are not lifted up, but shuffled along the ground. In advanced cases there is never a distinct interval between the movements of the feet, and each step does not reach the length of the shoe. In hysterical paralysis the feet are dragged along, usually one more markedly than the other, and the patient is inclined to drop in a heap. The fact, too, that the patient is a young woman should be regarded as very significant. In true paraplegia the patient does not drop so long as the power to walk remains. In pseudo-hypertrophic

paralysis the patient waddles much like the walk of a duck, and most markedly unlike the walk of a person afflicted with double talipes varus. In locomotor ataxia the feet are lifted up very high and brought down with a flop. In diseases of the cerebellum the walk is similar to that of a drunken person, staggering, unsteady or reeling. In paralysis agitans the patient trots forward, the body being bent forward, with shaking arms held out in front. This is simulated, to some extent, in lead and mercurial poisoning. In progressive muscular atrophy the rolling walk is much greater than that of the sailor, while the muscles of the ball of the thumb are wasted, and if the patient attempts to unbutton his clothes he does not try to use his thumb and index finger, but thrusts the upper edge of the buttonhole off the buttons with the dorsal aspect of his fingers.

In observing the walk of a patient one must be sure that the person has not an artificial leg, and that no osseous changes exist. In the early stage of hip-joint disease the leg is usually straight, carried slightly forward, or perhaps somewhat abducted, owing to the irritation and contraction of the capsular muscles on the anterior and outer aspects of the joint. As the disease advances the limb becomes adducted, so that the knee is carried against the lower part of the sound thigh. It is always to be remembered that a patient's walk may be changed by an imperfect recovery from a fractured bone. A limp is often caused by a sprain or a tight boot, and the disturbances of the walk caused by corns should never be overlooked. There are also the altered walk of acute or chronic intoxication and the hobble of gout to be borne in mind.

The swinging round of the afflicted leg, instead of the straight forward step, is characteristic of hip-joint disease, frequently called rheumatic, and the same swinging movement is met with in rigidity of the knee. In children there is a peculiar walk, with the pelvis tilted up, which tells a story that points to morbus coxarius.

The diathesis, or inherited constitution of a patient, is of the utmost importance, and should receive thoughtful consideration. It often affords information which points to the liability of the patient to certain forms of disease, according to the diathesis. A certain diathesis may have engrafted upon it a cachexia—an acquired condition—as, for instance, a person of a strumous

diathesis may have a syphilitic cachexia. In such a case a malady will be presented which will be found to be very intractable, and one which will demand the exercise of all of the physician's therapeutic ability.

The gouty or sanguine arthritic diathesis is characterized by a well-developed osseous system, firm muscles, erect carriage and robust appearance. The nutrition is active, digestion usually good, and the respiration deep. The heart is large, and the skin usually florid. The person has a large head and a large lower jaw, with solidly enameled teeth, which are often worn down. The hair is also strong and thick. The pulse is usually firm and steady, and the blood pressure in the arteries is high. Diseases of the vascular system—the gouty heart, with its almost innumerable associations—is common with this diathesis, and the high blood pressure in the arteries is very likely to lead to atheroma as a permanent condition, with apoplexy, aneurysm and angina pectoris as probable conditions. Hypertrophied left ventricle, with or without valvular disease, ending in decay and fatty degeneration of the heart, are also among the serious conditions to which this diathesis has a tendency.

The strumous diathesis presents an imperfectly developed osseous system of the retrogressive type, either toward the infantile or a lower race form, both as to cranium and other bones. The bones of the thorax are small, and the shafts of the long bones are slender, while their epiphyses are large in large bones, and the hand is unsightly. The forehead is often lofty and prominent, and there is a certain fullness of the lips and alæ nasi. The eyelashes are long and silken, and, when this diathesis is decidedly marked, there is usually ophthalmia tarsi. The teeth are carious and the lower jaw is often light and thin. The hair is fine and thin and not infrequently of a light color. The eyebrows are arched or very straight and often very thick, especially in brunettes. The skin is often moist with acid perspiration, and defective nutrition is shown in the tissues. Diseases of the bones, such as morbus coxarius, rickets and spinal curvature, are of frequent occurrence in children of this diathesis. There are also liable to be enlarged mesenteric glands, or a lardaceous liver, and, after puberty, pulmonary consumption and suppuration of the glands of the neck are among the abnormal conditions which may be expected. Women of this type fre-

quently have a large number of children, and then die early in middle life. Tubercular diseases, in all their forms, from meningitis in children to phthisis in adult life, are unusually frequent in the strumous diathesis. Syphilis is usually severe in strumous subjects. It is difficult to maintain nutrition in this class of patients, and, therefore, whenever there is disease of the osseous system, or of the lungs, careful and prolonged treatment will be needed.

As a class, persons of the nervous diathesis are small and far from fat. They are active, restless, unwearying beings, with small osseous framework, but with more muscular power than is usually possessed by more robust-appearing persons. They are very energetic and usually anxious to aid others in their troubles. The forehead is high and the skull is well vaulted, with small, well-formed features and an active-looking eye. They are the most common subjects of overwork, and their nervous system often shows the effect of the excessive demand made upon it. They are often victims of visceral derangements, especially dyspepsia and constipation. They do not always readily respond to treatment, but they are liable to be very susceptible to narcotic agents, although at times they require very large doses of such medicaments. This diathesis furnishes the greater number of persons who are said to possess "idiosyncrasies," and it is well for the physician to be very cautious in his dealings with them, and especially so if the patient is of the female gender. They usually prefer tea to alcohol, and before middle life are very affectionate, but when advanced in years, especially if they become gouty or rheumatic, they are often very irritable. Their family history usually reveals various neuroses among the different members.

The bilious diathesis manifests itself in a dark skin with black hair, and there is often a yellow tinge on the conjunctiva. Persons of this diathesis may be large or small and active or indolent, according to the influence exerted by the blending of the gouty, nervous or lymphatic diathesis with the bilious diathesis. When associated with the strumous diathesis the patient will be found to be a person in whom tubercle, if once acquired, will run a rapidly downward course, and, in this respect, resembling tuberculosis in the negro. Individuals of the bilious diathesis seldom become fleshy, and with them the hydrocarbons are not well

assimilated. From their chemical composition acids can be traced in their origin from albuminoids of foods, and the presence of bile acids in excess in the blood of the bilious, affecting their intestinal canal, is as common as is lithiasis in the gouty. In each case the product is of albuminoid descent, and, therefore, abstinence in the matter of nitrogenizing foods and alkaline cathartics should be enforced. It is in these persons that small localized spots of pain can be found at or about the lower inner angle of the scapulæ. Why a waste-laden blood should give rise to these spots of pain is not well understood.

Persons of the lymphatic diathesis are usually large, unenergetic, listless and fleshy individuals. This diathesis is the direct opposite of the nervous diathesis. These patients are always in a condition of health far below the normal standard, and they require large quantities of nutritious food in order to possess an approach to a sense of energy. They usually have a large osseous framework, but their muscles are soft and their brains inactive. They are not usually florid, but, on the contrary, they are commonly pallid. They are never well in low-lying sections. They require treatment of a stimulating and tonic character when sick, and they should never be given depressants. Women of this diathesis frequently have menorrhagia and are almost never free from leucorrhea. In parturition they are liable to bleed profusely.

With each form of diathesis there is superimposed a cachexia. The gouty individual may be anemic or the subject of lead poisoning. Persons of this diathesis are very susceptible to lead poisoning. The strumous person may have gout, the nervous individual may be the subject of malarial cachexia, and the lymphatic patient may have acquired syphilis. In all such cases it is necessary to keep in mind the diathesis as well as this cachexia, and to make proper allowance for both in the prognosis and treatment.

The cachexiæ most frequently seen are malarial poisoning, anemiæ of varied origin, gout and syphilis. These cachexiæ may be acquired in various ways—either from want of proper food, from mal-assimilation, from poisons formed within the body or absorbed from without, as lead in painters, plumbers and printers; mercury in gilders and looking-glass makers; arsenic from wall papers and other colored materials; copper from kitchen

utensils, or tin from the canned provisions which are now so commonly used. In all anemiæ associated with a poison the antidote for the poison must be added to the remedies demanded by the specific indications.

The expressions of the face should be closely observed, as they often render a diagnostic aid which is of the utmost importance to the practitioner of specific medication. The choleraic face—that pertaining to cholera—is of an ashen hue; the skin is livid and the eyes are sunken. The Hippocratic face is pale, of a leaden hue, with sunken eyes, the eyelids separated, the cornea losing its transparency, the nose pinched, the temple hollow and the lower jaw falling. This is the face of death, and when well marked recovery is impossible. In typhoid conditions the face is expressionless and dull, the lips and teeth frequently covered with sordes, and the patient lies flat on the back. In pyemia the expression is lost, or is that of dull indifference. In peritonitis the upper lip is raised sufficiently to expose the front teeth in a manner which is quite characteristic of the disease. The twitch of abdominal pain which flits over the face, producing a twitching of the lips and contraction of the eyebrows with a frown, presents a picture of disease which, when once observed, can never be forgotten. The twitch is peculiar to disease below the diaphragm. It is best studied in the face of the parturient woman when the pains come on, especially in the second stage of labor.

The pallor blended with an expression of suffering, such as is seen in vertebral cancer, is the face of grave organic disease. It may be seen in abdominal aneurysm where there is spinal caries, in caries of the vertebræ, in repeated angina, and, with a lack of depression, in persistent headache, especially in that of organic origin.

The face of the hectic, the wasting, the general pallor, with the bright red spot over the cheek-bones, and the quivering of the nostrils, make clear the fact that consumption has fully begun a course which usually soon terminates in death. There are cases, however, when the family history is good, in which this condition is survived for many years. The tuberculous mass softens and is expectorated, and the patient recovers with a cavity in the lungs.

In examining a patient it is well to give the hair careful atten-

tion, as it often tells a story of great value to the practitioner of medicine. When it is strong and coarse it usually constitutes very good evidence of a strong constitution. If coarse hair turns gray early a gouty taint is suggested. Coarse hair rarely falls early, and it is often found thick and white in persons of great age. Thin fine hair is most frequently found in strumous cases, especially when the patient is very fair. It is the hair usually found on precocious children who are carried off in early youth by tuberculous disease in some of its forms.

Fine hair usually falls early, leaving only a fringe around the head. This condition is often seen in persons with lithiasis or chronic Bright's disease, but by no means in the subjects of these diseases only. It is, therefore, simply suggestive. Graying of the hair on the temples indicates approaching old age. In some cases isolated very white hairs are found scattered through very black hair. This condition of the hair some authors believe to be suggestive of some pathological change in the kidneys, though not so advanced as to exert an influence of a grave nature.

Good nutrition of the hair is shown by its being glossy and bright. In some diseases, such, for instance, as advancing phthisis, the hair loses its luster, and becomes dry and brittle. It recovers its natural look and appearance as soon as health is restored. When a consumptive patient has not been seen for a considerable time the condition of the hair is often a very good evidence of the general state of the patient's health. A good full head of hair, like good teeth, usually indicates a good constitution, but there are many exceptions to be found, especially in persons of the strumous diathesis.

A close observation of the forehead will many times result in the acquirement of knowledge having an important bearing on the condition of a patient. When well vaulted the forehead forms a part of the nervous diathesis. When broad and rather low it usually goes with a stalwart frame and a bulky body. The lofty brow is usually accompanied by a thin flank, and small digestive viscera, and a liability to indigestion. The broad low brow is usually found in persons having square abdomens, large digestive organs, and good assimilation, with a tendency to gout. The forehead may be protuberant from an excessive ossification of the centers of the frontal bones, and this is very likely to be found with defective development of the rest of the bones, to-

gether with wide fontanelles, such as are seen in hydrocephalic infants. This condition is also seen in the rachitic forehead. In rickets the child's head is often unusually large, the vertex flattened and the forehead prominent, broad and square, with considerable expansion at the centers of the parietal bones. Sometimes the sutures remain open. In other cases they close prematurely, and then the growth of the cranium is arrested, thus causing the infant to remain a child in intellect or become an idiot. In strumous children with a syphilitic taint the forehead may become so prominent as to project in front of the face. In these cases the arrested development of the facial bones intensifies the deformity. In some cases the forehead may be regarded as a moral indication worthy of remembrance. A woman with a forehead which has become hard and ivory-like is said to be capable of denying pregnancy with the most unblushing effrontery, and of an utterly untruthful character when anything connected with improper sexual relations is involved. In some cases the forehead may be disfigured by one single copper-colored spot, telling a story which makes the diagnosis of syphilis positive. Ulceration of the forehead is said to be always syphilitic, except when the result of a wound. Scars on the forehead, without a history of injury, are always suggestive.

Something of importance to the physician can be learned by closely observing the eyebrows. When the eyebrows are exceedingly arched or unusually straight, and, still more, when they are also very thick and bushy, they indicate struma. If persons possessing such eyebrows become the subjects of phthisis it usually runs a severe and rapid course. Severe and repeated attacks of facial neuralgia may lead to an increased growth of the eyebrows, especially at the outer extremity, and there may be a patch of dark-colored skin around it.

It is well to remember that the eyelashes are also modified by the strumous diathesis. In the finer forms they are very long and silken, but when the condition of ophthalmia tarsi is reached their appearance is very unpleasing, and, at times, repulsive.

The condition of the eyelids is often suggestive. If there is edema under the lower lid, distinctly seen on rising in the morning and largely disappearing during the day, it may be associated with Bright's disease. This edema is often seen in

ladies of middle age with pallor, and constitutes the anemic form. In advanced life it is not infrequently seen even along with a high complexion. An examination of the inside of the lower eyelid will often afford a very good idea of the amount of anemia existing in a case. The upper eyelid may be paralyzed, as in ptosis, showing that the superior branch of the third nerve is involved. A dark pigmentation of the eyelids is not unusual in pregnancy, where pigment changes are common. Sometimes there are patches of deep pigmentation on the brow as well. These pigment changes indicate pregnancy in some women at a very early period, a fact well worth remembering when examining cases of suspected pregnancy. They are likely to recur in the same woman.

The eye is capable of revealing to the physician many valuable facts not easily obtained through any other source. It should, therefore, be carefully studied. In exophthalmic goitre the eye is very prominent, except in slight cases. The conjunctiva may be stained yellow in jaundice and biliousness, or it may appear pearly-white in certain cases of Bright's disease. In persons who freely indulge in alcohol the eye is often unnaturally vascular. A squint is often an indication of hydrocephalus in infants. It is likely to be a momentary squint at first, but as the abnormal condition increases the squint becomes more persistent. In like manner a squint is developed in some brain diseases in the adult.

The cornea may be chronically inflamed at about puberty as a result of a syphilitic taint. Under proper treatment the inflammation may clear up, but if neglected permanent opacity is likely to result. At the union of the cornea and sclerotic a ring or bow is sometimes seen and known as arcus senilis. It is an evidence of advancing age, but it is well to remember that there are two forms of arcus—one suggestive of evil omen and the other of little if any significance. The latter being the more prominent of the two, unless considerable care is exercised unpleasant mistakes may be made. The innocent form is very distinct, with sharply defined outlines and a clear cornea, and is calcareous in its nature. It is very common in pale old people, and especially so in persons with light blue eyes. It has no significance whatever. The other form, however, tells of tissue decay. It has badly defined edges. The cornea is hazy and

cloudy from fat granules being scattered throughout the part. It is more pronounced under the eyelids, where the arcus is often seen very distinctly, when it is scarcely recognizable in that portion which is exposed to light. It is often well, then, to lift the eyelid when in doubt, as well as when the question arises as to whether or not there may be fatty degeneration in the fibers of the heart. The pupils should be carefully examined. Sometimes the iris is the seat of inflammation, and the formation of a tubercle at the inner or free edge of the iris is common in syphilis. The pupils may be of unequal size. Contraction of one pupil is often found in aneurism of the aorta. When the pupils are both extremely contracted the suspicion of opium poisoning should be aroused, or indulgence in some preparation containing opium may be considered. It is well, however, to remember that it is possible that the contraction may be the result of hemorrhage into the pons varolii. In apoplexy the pupil of the paralyzed side is usually dilated, but this is not invariably the case. In convulsions the pupil may be widely dilated, contracting again as soon as the attack is over. Dilatation of the pupil occurs just before death in opium poisoning.

A close observation will soon show the physician that the nose is not always far behind other parts of the body in telling an interesting story. The nostrils many times rapidly move and quiver in thoracic disease as well as in conditions of nervousness. When the bridge of the nose is markedly sunken inherited syphilis is suggested. The snuffles of syphilitic infants when once heard cannot be readily forgotten. The chronic inflammation of the bones of the nose, which is often set up in these children, may result in their arrested growth. The alæ nasi may be full as in struma. The tip of the nose is often red and tuberous in chronic alcoholism, a condition which may be simulated by disease in some cases. This fact is well worth being remembered when examining women suffering from indigestion and constipation with or without pelvic complications. In these cases the tip of the nose is often red, while the nose is abnormally pale.

In many cases the condition of the lips is not unworthy of the physician's attention. In strumous children they are fuller than usual, and a certain fullness of the lips, and especially the under lip, is said to indicate very strong sexual proclivities.

Scars at the angles of the mouth, when not the result of injuries, may be safely regarded as an indication that the patient has had syphilis. Sordes on the lips and teeth usually accompany typhoid conditions.

The careful diagnostician should not overlook the gums, for they, too, often have a story to tell. The blue lead line along the teeth is an excellent indication of lead poisoning. A spongy condition of the gums is found in purpura and scurvy, and also in poisoning by mercury.

A study of the vascular condition of the skin of the face cannot be too thoroughly made. The presence of a high complexion may simply tell of exposure to cold—the vascular fullness protecting the skin from the cold to which it is exposed—and, on the other hand, pallor of the surface may indicate merely the opposite state—indoor occupation. In many other ways, however, the vascularity of the skin of the face may afford important suggestions. At times little tree-like things are seen where the small artery pierces the skin and shows upon the surface. These arterial twigs are said by eminent authors to be a part of the atheromatous changes which accompany the gouty heart. A hard radial pulse, an hypertrophic left ventricle, and an accentuated aortic second sound, are the associated conditions. In this condition the urine is copious. Aortic dilatation, apoplexy, aneurism and angina pectoris are among the complications to be here looked for. As the heart fails there is arterial anemia, with pallor and venous fullness, with lividity about the lips. The temporal artery may be tortuous in young persons, and may even be seen to pulsate when a strong light falls upon the face. This, however, has no particular significance, but usually the condition of the temporal artery reveals that of the general arterial system. In aortic regurgitation the diagnosis may at times be made by observation of the temporal artery. The impression of "balls of blood-shot under the finger," as applied to the sensation imparted on feeling the radial pulse, is conveyed to the eye; it is possible almost to see the ventricle rapidly impel its contents into the arteries, and then the sudden collapse as the backward flow, on the aortic recoil, is no longer arrested by healthy aortic valves. Such abrupt collapse indicates considerable shriveling of the free edges of the aortic valves, with the open condition aggravated by dilatation of the

aortic conus. When the incompetency is blended with a rigid condition of the aortic valves, constituting obstruction, this sudden collapsing of the temporal artery is not found.

The atheromatous changes in the arterial wall may be of two kinds. In the one case the wall is thick and soft, suggesting the idea of being swollen. Here the pulse is comparatively soft, and fatty degenerative changes are associated therewith. At other times the pulse is small and hard, and then it is suggestive of visceral cirrhosis. The radial artery and the temporal artery are both influenced in the same direction by like degenerative changes, whether the arterial system generally is the subject of fatty or calcareous degeneration. In some young men a parchment-looking skin is tightly stretched over the tissues beneath and the temporal artery is very conspicuous, being both tortuous and thickened. This condition is regarded by some authors as an evidence of a syphilitic taint. Syphilis and alcoholism expedite atheromatous changes in the arteries.

The face may be distorted by paralysis. The features are drawn toward the sound side and the saliva dribbles from the palsied side; the cheek is flaccid and is blown out by a strong expiration. The patient cannot frown with the affected side nor shut the eye, though that on the sound side is freely closed. He cannot whistle nor pronounce the labial consonants distinctly unless the palsied side of the lower lip be held up by the finger, and if he attempts to protrude the tongue it curves round to the palsied side. The sensation of the paralyzed side is generally unimpaired. Inability to close an eye, or ptosis, usually indicates intracranial disease, while facial paralysis, generally, may be local or peripheral. At times there are intermitting spasms of the facial muscles. In some cases they are confined to eye muscles and simulate a decided wink. At other times they implicate other muscles and give an odd and unpleasant appearance to the face.

A wrinkled ear lobe, with a face seamed with wrinkles, is suggestive of chronic visceral cirrhosis. Here the skin is very dry. A discharge from the ear should always receive prompt and careful attention for various apparent reasons, and especially on account of the fact that chronic otorrhea not infrequently causes meningeal inflammation, sometimes ending in death.

Wry-neck may be temporary and due to cold or rheumatism, or it may become permanent as a result of inflamed glands after scarlet fever or measles. It may also result from disease of the spinal vertebræ, or from the cicatrix of a burn, and from other causes. Enlargement of the thyroid gland may be due to a varicose condition of its blood-vessels, but it more commonly goes with exophthalmos, and it may be found to be a part of Graves' disease. The arteries of the neck usually pulsate violently and distinctly in aortic regurgitation, and as markedly on one side in aneurism involving the carotid artery. At other times the jugular veins pulsate, indicating regurgitation of venous blood on the systole of the right ventricle, with or without tricuspid incompetency.

The respiration may be hurried and shallow, or it may be deep and labored. The first may be caused by nervousness, or it may be associated with pulmonary phthisis. The latter is found in chronic bronchitis and in emphysema. When the deep and labored respiration is very pronounced there is dyspnea and the respiration is both rapid and labored. The character of the respiration, the pallid or livid countenance, and the anxious look of the patient, usually make chronic bronchitis and emphysema clearly apparent to the educated eye. In pneumonia the breathing is hurried, and the rapidity of the respiration is often the measure of the amount of disease. There is a considerable modification of the shoulders in chronic asthmatics. They are elevated and drawn forward by the pectoral muscles being accessory muscles of respiration, and when they have been much used as such they draw the shoulders forward. In extensive emphysema the chest becomes barrel-formed, but in persons predisposed to phthisis it is quite flat.

In many diseases there is an unnatural fullness of the abdomen, prominent among which are large uterine fibroids, hydatids of the liver, ascites in amyloid diseases of the liver, cancer enlargement of the liver from alcoholism, and, at times, from tympanites. In young children the abdomen is swollen in diseases of the mesenteric glands.

In some women who are subjects of neurosal affections of an hysterical character the fingers are spasmodically closed, but the spasm is usually intermittent. In lead poisoning the hand is often dropped. In hydrocephalus in children it is well to

remember that the hand is closed upon the thumb—often very tightly. In chorea the movements of the hands constitute symptoms which aid much in making a correct diagnosis. Chorea may be confined to the hands, or implicate the feet, and, at times, muscles of the trunk.

In describing the "twitch of abdominal pain," Dr. Marshall Hall says:

"In inflammation of the abdomen, with severe pain, there is a continued state of concentration of the muscles of the face inducing an unnatural acuteness of the features; the forehead is wrinkled and the brows are knit; the nostrils are acute, drawn upward, and moved by the alternate irregular acts of respiration; wrinkles which pass from the nostrils obliquely downward are deeply marked; the upper lip is drawn upward, and the under one perhaps downward, exposing the teeth."

Many of the facts embodied in the foregoing description of symptoms of disease were taken from the writings of Professors Fothergill and Laycox.

Specific Expressions of Disease and Remedies Indicated by Them.

Many conditions of disease find outward expression through the muscular system and its investing connective tissue and skin, and the physician should recognize them as soon as his eyes have made their examination.

Disease has a voiceless language, and it is this we wish to study, but in order to do so we must get a basis for thought. Commence to think of it and find illustrations in every-day life. The reader will find many such illustrations as he pursues his daily duties.

In acute disease the impairment of life is usually such that the patient assumes the horizontal position, as this requires the expenditure of much less power than any other. In health the horizontal position is associated with rest, and when assumed at unusual times with the idea of debility. Thus the first idea obtained from seeing the patient in bed is that there is impairment of life. It would be a great advantage to the sick if all physicians would keep this fact constantly in mind, and attach such importance to it as would cause them to avoid increasing

the debilitated condition by the administration of depressing drugs.

Evidently this fact is one of much importance, and whilst the general expression may not be absolute evidence, it is among the best we have. If, in acute disease, the patient keeps his bed all the time, there is considerable impairment of life. If in ordinary chronic disease we find the patient frequently assuming the recumbent position, and maintaining it for a considerable time, we have to consider it an evidence of enfeeblement, and we husband our patient's strength and employ the class of remedies known as restorative, with appropriate food.

Studying the patient's expression in bed, we find that it gives us additional information. If he lie on his sides, changing his position readily, holds his shoulders and extremities in position, we conclude that the impairment is not great as yet. But if we see him inclined to lie upon the back, or if upon the side that the shoulder falls forward or down, the arm falls and is expressionless, the upper leg and hip show the inclination to fall, and even the soft tissues of the face droop, we are certain there is great impairment of life, and the treatment *must* be conservative and restorative. In the worst case, where the patient lies continuously upon his back, and is inclined to slip toward the foot of the bed, physicians usually recognize the approach of death.

There can be no mistake about the importance of the inquiry, or the character and certainty of these expressions. If we know the life is feeble, we will certainly husband it, and guard against unnecessary expenditure. If we know the life is feeble, we will be sure to avoid unpleasant and harsh medicines, especially the class antiphlogistic. If we know the life is feeble, we will appreciate the importance of keeping the digestive organs in good condition and giving the necessary food. If we know the life is feeble, and we have anything in our materia medica that will aid and strengthen it, we will realize the importance of its use.

To determine the condition of rest or unrest is of great importance. When a man or a part is sick, rest is necessary to recovery, and very much of the treatment used looks to procuring rest. The position of recumbence is assumed to get rest, yet we find that many times this is not sufficient. It is well to know that we have to think of this with reference to sleep as

when awake, for though sleep usually means rest in health, it may not give rest in disease.

It is well to get an idea of perfect rest in health as a standard of comparison. Observe the child sleeping, and the perfect equipoise of the entire muscular system and the natural position of the extremities show the condition of rest. Even when the child falls asleep in a constrained and unnatural position, the body so adapts itself to it that we have the idea of rest. A group of harvest workmen, taking their noonday rest on the grass under the shade of a tree, will give every shade of this restful expression, and is well worth our study. We learn something here that cannot be told in words, but which serves as an excellent standard of comparison at the sick-bed. Notice the position of a healthy person in sleep, especially how the body accommodates itself to bed and pillows, so that one position will sometimes be maintained the whole night with rest to every part.

Now, when we come to examine the sick the condition of unrest is clearly expressed. The body does not accommodate itself to the bed, and the effort to maintain the position shows itself in the constraint of different parts. We see it in the evident contraction of the cervical muscles to hold the head in position; in the unnatural flexure of the extremities to maintain the body and themselves in position. We have every gradation of these expressions, from that which comes some time after the position of the body has been moved, when the patient is tired, to that which is so continuously marked that we know the patient has not one moment's rest.

The position of the body tells us whether the disease is one of excitation or depression, especially as regards the circulation. This also is an important element in diagnosis, and refers us to appropriate remedies.

The condition of *excitation* is marked by constraint and undue contraction. We notice it in the expression of the entire person and of special parts. In the first it has reference to the entire body; in the second it is more the expression of local disease. The ideas that we get are of want of ease, and of constant effort on the part of the muscular system to obtain it. An unusual and constrained position of one or more of the extremities is quite a common expression. It may be but flexure of one leg, throwing it out or from the body, or a contraction and

elevation of one shoulder, or a prone forearm and hand with marked muscular contraction, or an unpleasant constrained position of the head, with prominence of the cervical muscles, or we may have it in facial expression. Once the mind is directed to it, these features are quickly learned, and, having the knowledge of health, we quickly determine the extent of the lesion.

The evidences of enfeebled function—*depression*—are just the opposite. Whilst in the previous case we have an unusual excitement of the nerves and of the vascular systems, in this we have deficient innervation and impaired circulation. In this there is want of expression; the body lies, so to speak, as if no effort were made to hold it in position; parts fall of their own weight. The want of expression is noticed especially in the subcutaneous muscles and in the skin, giving an unpleasant uniformity of surface and a sodden expression to the soft tissues.

Pain, or suffering, is expressed in every portion of the body, and one may learn to recognize it as soon as the eyes strike the body, and yet it would be difficult to describe the expression. When pain is associated with or the result of undue excitation, the expression will be that just named under this head. But if associated with or the result of an enfeebled condition, either of the entire body, the part suffering or the brain, the general expression may be quite the reverse, and will more resemble the exhaustion that follows excessive grief—one of anguish.

As has been clearly shown by Darwin, expression is most marked in those muscles in most common use, or those associated with mental activity. Thus we would expect to find the most marked expression in the face, and next, probably, in the hands and the extremities. If the reader will think for a moment, he will probably recall distinct expressions in these forms. He will especially recollect the common expressions of pain in the muscles of the orbits and frontal region from contraction of the corrugator supercilii, some of the fibers of the occipito-frontalis, the orbiculars, and sometimes the zygomatic. His attention will only need to be called to the forced contraction of the flexors of the hand during labor, the involuntary expression of pain, and to similar contraction in the feet. Indeed, here is a most excellent study, and one may learn the natural history of pain by closely observing a few labors.

There is nothing like having a familiar example for study,

and we may look still further at the phenomena of childbirth. These expressions have the same meaning as in ordinary disease, though here we find them greatly intensified. Possibly we will get as good an idea of rest during the absence of pain in a natural labor as we can get anywhere. And in a difficult labor we will get as distinct an idea of the state of unrest. We observe the pain finding expression in marked muscular contraction of the muscles of the upper and lower extremities and the forced flexion of the muscles of the hands and feet. We also see the expression of pain in the countenance, but in natural labors it is evanescent and not very marked. In difficult labors, especially where the pains are inefficient, we find the constant contraction of the "muscles of pain," and it is one of the evidences of this condition.

The evidence of *local disease* will be found in the position of the body with reference to removing pressure from the part or giving it support. This is sometimes so distinct that the attention is at once directed to the affected part. If the position of the body is such as to take off muscular pressure, we conclude that the disease is one of excitation. If, on the contrary, the position is such as to give additional support, we would think of it as being one of impaired innervation and circulation, possibly congestion. A man gives a diseased leg rest in the same manner as a horse. Flexion takes off tension, and if the disease is one of irritation the limb is flexed. Disease of bladder or rectum will be indicated by flexure and crossing of one thigh over the other. Disease of the abdominal viscera, by flexion of the thighs upon the trunk, and probably flexion of the trunk. Disease of one kidney will be announced by flexion of the body on the affected side. Disease of the stomach by marked flexion of the trunk, and relaxation of the abdominal muscles and diaphragm and thoracic respiration. Disease of one lung will be indicated by the flexion of the body on the affected side and the drooping of that shoulder. Disease of the upper lobe of the lungs will be indicated by the falling of the shoulders forward, the additional curvature in the upper dorsal and cervical spine, and by abdominal respiration.

A very natural expression of disease is the involuntary movement of the hand to it. In typhoid fever, when the patient is seemingly wholly unconscious, we find the hand over the bladder

in retention of urine, as it seeks the umbilicus when disease of Peyer's patches is marked. The child suffering from disease of the ear involuntarily carries the hand to the affected part. In acute disease of the kidneys the hands are carried to the loins. In some gastro-intestinal disease the hands sometimes go to the mouth, and it seems as if the child wanted to get something out of its throat. It is always well in low forms of disease to carefully watch these expressions, as they give us early intimations of local trouble. And in disease of children, when we have to depend almost wholly upon our own observation, it is also well to carefully observe every expression.

Mental states find easiest expression in the usual channels of innervation, and through those muscles in common use. This is not only true of mental activity, but is also true of disease. There is no disease without a wrong of the nervous system, and it may be added with truth, that there is no wrong of life that is not represented upon the surface through the nervous system. We may not be able to read it, because our senses have not been trained to observation, and we have not sufficient experience, but the fact that disease is thus expressed should stimulate to study.

The face will show clearly the *right* life that we call health; and the *wrong* life we call disease. If one will closely study the expression of the face in health, and compare it with the expression seen in sickness, this fact will be clearly seen. It not only tells us of impaired life, but also of the kind of impairment and of the remedies that will remove the wrong and restore health. It will be well to make a study with reference to (1) the condition of the brain; (2) with reference to the condition of the sympathetic nervous system, and associated spinal cord; (3) with reference to the condition of the circulation and the blood; (4) with reference to local disease; (5) with reference to pain; and (6) with reference to resistence of disease.

The condition of the brain is clearly expressed in the face, and when understood these expressions prove of much value in making a correct diagnosis.

Determination of blood is marked by flushed face, unnaturally bright eyes, contracted pupils, and general but moderate contraction of the facial muscles. The expression is one of excitation, and the patient is restless and uneasy. The indicated leading remedy is gelsemium.

Congestion is characterized by dull eyes, dilated pupils, immobile pupils, expressionless face, patient dull, inclined to sleep, and eventually there is coma. The direct remedy is belladonna. In some cases, and when associated with local disease with impairment of the involuntary muscles, ergot. The indirect means are counter-irritation and stimulant cathartics.

An intermediate *hyperemia,* observed in apoplectic conditions, is marked by fullness of the eyes, which are protruded, fullness of face, prominent veins, and, from contraction of the *platysma,* a drawing down of the face and agles of the mouth. For this condition the direct remedies would be veratrum viride, ergot and apocynum.

Inflammation is marked by still greater contraction of the muscles, especially those of the orbits and the frontal region, the deeper flushing of the face, the sharper expression of the eyes, which are dry and pinched, the contracted pupils, and as the life is impaired, by the appearance of constriction of all the tissues around the base of the brain. The direct remedies in the first stage of an inflammation of the brain are the proper sedatives, such as aconite, veratrum, gelsemium and ferrum phosphoricum. These may be followed and aided by such as increase the action from skin, kidneys and bowels. The indirect remedies are such as may call the excitation to other parts.

Effusion is marked by the dullness and finally by coma. The eyes lose their sharp, bright expression and become dull; the muscles of the lower part of the face relax, as do the muscles that move the inferior maxillary and the mastoid. If the irritation still continues, the contraction of the orbiculars and frontal muscles persists, and the evident constriction or pinched appearance around the base of the brain becomes more prominent. If the irritation passes away with the effusion, these muscles gradually lose their power, and the upper part of the face assumes a dull, sodden appearance. The direct remedies are small doses of aconite and belladonna, alternated with apocynum and bryonia.

The nutrition of the brain is not so easily determined, yet we may reach correct conclusions in the majority of cases. The enfeebled nutrition will be marked by a want of expression, especially in the mouth, showing a want of decision. The eyes may have a normal appearance at first sight, yet as we watch them uncertainty is shown in their movements. In some cases

the expression when the patient's attention is not attracted is very like that which follows exhaustion from excessive emotion.

Softening of the brain, so called, will be marked by a smooth, placid countenance, the want of expression in the forehead being especially marked. In some of these cases the tissues have their ordinary fullness, and sometimes the soft tissues of the face are unusually full, yet they look soft and flabby, and hang in unnatural folds.

Atrophic irritation of the brain is marked by the pinched and uneasy expression of the upper facial muscles, the muscles of the orbits and frontal region. The patient holds his head in a constrained position, frequently inclined to one shoulder, and the face turned to one side, giving the eyes an unpleasant expression of obliquity. The elevation of one eyebrow and the falling of the other, with an apparent divergence in the axis of the eyes, will locate the lesion in or near the cerebellum.

The evidences of *structural disease* vary with the situation and character of the lesion. They may be divided into irritative and atonic, the one showing marked contraction of some muscle or muscles of expression, the other a want of contraction, and consequent fullness and drooping. Sometimes in the severest structural disease there is no etxernal expression.

The functional activity is very clearly shown in facial expression, and we will observe the entire range from normal function to furious delirium on the one hand, and to entire loss of function and conscious life on the other.

Activity is not only shown in muscular contraction, but in alternate contraction—the play of the emotions—of the muscles. This change of expression is one of the most familiar examples of mental activity. In delirium we observe that the play of the muscles is exaggerated, as indeed is the expression of all the emotions. This is especially noticeable in the expression and movement of the eyes and their external muscles.

Want of activity is expressed by want of contraction of the facial muscles, dull, immobile eyes, and full lids.

The condition of the *sympathetic nervous system* is pretty clearly shown by the eyes, the orbital muscles and the tissues about the base of the brain. The disease of irritation is shown by the contraction of the tissues which form the bed of the eye, the retraction of the eye, especially upward, the thinned and con-

stricted eyelids, and the tissues about the temples. In some cases the pinched or constricted alæ nasi is a marked feature. The disease of atony is shown by the full, expressionless eyes, fullness of the lids, pallid and waving alæ nasi, and fullness and want of expression about the mouth.

A temporary want of sympathetic innervation that is rectified by podophyllin in very small doses is shown in the fullness of all the tissues of the face, especially the upper portion, and by fullness of the veins.

For the disease of irritation ipecac, bryonia, aconite, rhus tox., muriatic acid and nitric acid are suggested, the selection being made by the other symptoms present. Temporary relief is obtained by the local application of chloroform before and behind the ears, and over the first cervical ganglion. The chloroform is so applied as to prevent evaporation, and a change in the pulse will usually be noticed in a few minutes from its first application, and the relief is marked, and very frequently it lasts for some time.

The disease of atony is met by nux vomica, avena, cyprepedium, cratægus, minute doses of podophyllin, phosphorus and the bitter tonics.

Whilst the expression of the face will give us pretty accurate information with regard to the circulation, we may obtain this information more directly elsewhere. If the cellular tissue is full, we think of veratrum. If it is shrunken, aconite. If the expression of the eyes and associate muscles is dull, with fullness, we think of capillary congestion and belladonna. If the cellular tissue is full, the face expressionless, and the veins prominent, podophyllin. If the eyelids are especially full, apocynum. If the eyes have a pinched expression, dry in acute disease, secretion of tears in absence of fever, dry, shriveled epidermis, flushed left cheek, rhus tox. Right eyebrow drawn down, and expression of eye changed, flushed right cheek, bryonia. These are the most prominent examples, and in each case there is a wrong of the circulation, which may be the predominant wrong. At any rate, the remedies thus indicated will prove curative.

With reference to the *condition of the blood,* we may find more direct expressions than in the face, yet these are not unimportant. The sodden tissue evidences poor blood and poor nutrition, as the firm elastic tissues show good blood and good

nutrition. The *typhoid* condition of the blood will be clearly shown in the contracted and opaque skin in the one case, and the sodden inelastic tissues in the other. Pyemia will show itself first in the marked contraction of tissue about the base of the brain, sinking in of the bed of the eyes, and especially by retraction in the upper part of the orbit.

Some *local diseases* are clearly indicated by facial expression. Disease of the respiratory apparatus will be shown by the expression of the nose and accessory muscles. The lesions of irritation by contraction, the lesions of atony by relaxation. Any one who has watched the progress of an acute inflammation of lungs, of pleura, or of bronchia, with irritative cough, must have seen the pinched expression of the nose, and the contraction of the alæ. So marked is this, that sometimes it seems to precede the trouble, and will be marked before the disease of the respiratory apparatus has full development. The relaxed and waving alæ nasi gives an unpleasant impression of disease, and as before named, has reference to the lesion of innervation as well as to impairment of the respiratory function.

The expressions of the mouth are associated with disease of the abdominal and pelvic viscera. Let us take the familiar examples of intestinal worms as an illustration. The full upper lip, with pallor, the white lines around the mouth and picking the nose is the most pronounced evidence of ascaris lumbricoides. This worm inhabits the small intestine, and the conditions present are atony of mucous membranes, with impaired function, and increased secretion of mucus, and at once we think of the associated symptoms and the intestinal wrong.

The remedies will be those which will give normal stimulation to the structures involved—podophyllin, santonin, some of the mild cathartics, the stomachic bitters, and sometimes the alkaline salts or acids, as may be indicated by other symptoms.

If fullness in this case means atony and impaired function and increased mucous secretion, it must mean it always, and we will always think of such remedies as will influence the small intestine and associate viscera, giving normal stimulation and circulation and restoring functional activity. There is a peculiar expressionless mouth, or an expression of "loss of spirits," with a little depression of the angles of the mouth that invariably means nux vomica.

Nausea is shown by depression of the angles of the mouth and slight incurving of the lower lip. If the tissues are full, we know that there is atony; if pinched and shrunken, that there is irritation and determination of blood.

Contraction of the orbicularis oris is usually found in some diseases of the reproductive organs, especially of the female. In chronic disease, there is distinct retraction from the other muscles of the face, and the entire tissues seem thinned. In some of these cases the zygomatic muscles are also prominent.

Pain and suffering are distinctly expressed in the features, yet not always in the same way. Firm contraction of the muscles is the most common expression. Thus every reader will recollect the contracted brow as evidencing pain, especially pain with irritation of the nerve centers. We involuntarily associate contraction of the structures about the eyes and the wrinkled skin with pain or with suffering. But we have the evidence of pain in this region without muscular contraction; indeed, there is the reverse, drooping of the tissues, the expression is sad, of the exhaustion that follows excessive grief, and we are assured that there is enfeebled circulation in the brain and the pain is the expression of atony.

It is very important to make these distinctions in order to select remedies. Pain is the result of two very opposite conditions—an excited circulation and an enfeebled circulation. In the one case we use gelsemium, the sedatives, salines, rhus, macrotys, or bryonia, as may be indicated. In the other we use quinine, nux, stimulants and tonics.

Pain in the abdomen, pelvis, or lower extremities, finds expression in the mouth. Acute pain almost always finds expression in contraction of the mouth; when very severe the lips are firmly drawn in, the angles of the mouth retracted and somewhat depressed. In some other cases the angles of the mouth are drawn in, and there is that action of the muscles of the upper lip that gives it and the cheeks a full expression.

Some patients *resist* disease by an influence of the will, and sometimes this effort is very important. Others yield to it from the first, and thus favor its progress. Every one has made these observations, and will recognize the importance of knowing whether a patient resists or yields, as it may determine whether he will recover or die.

An eminent author has said that "the firm closure of the mouth tends to give an expression of determination or decision to the countenance. No determined man probably ever had an habitually gaping mouth. Hence, also, a small and weak lower jaw, which seems to indicate that the mouth is not habitually and firmly closed, is commonly thought to be characteristic of feebleness of character. A prolonged effort of body or mind implies previous determination; and if it can be shown that the mouth is generally closed with firmness before and during a great and continued exertion of the muscular system, then, through the principle of association, the mouth would almost certainly be closed as soon as any determined resolution was taken."

It is important to know whether the patient is inclined to resist disease and is determined to get well, or whether he is yielding, despondent, hopeless. The firm mouth means that the patient will get well if he can. The relaxed, drooping mouth, falling jaw, trembling muscles, show us the need of giving the patient courage and strengthening the will power. It also shows the necessity of increased care to conserve vitality, and of the employment of restorative remedies.

We not only find disease expressed in position, and in persistent muscular contraction, as heretofore named, but it is also shown in motion. We see a man standing or sitting, and observe that his soft tissues seem to resemble a badly fitting suit of clothes, and we think at once of impaired nutrition and degeneration of tissue. But it may be only a want of innervation, from habitual torpor of the nervous system. Set him in motion, and we will soon see whether this is so or not, for there are none so sluggish in this respect but what they may be aroused.

We notice the movements of the person that we may confirm the diagnosis of expression, especially as regards the important point of undue irritation and circulation, or impaired innervation and circulation. The quick, restless movement is characteristic of the first; the desire to lie still and the slow movements, of the second. Possibly there is no evidence of disease more definite than this, and it should be allowed its full weight in diagnosis.

In some cases the rapid movement is but a means of remov-

ing excessive excitement of the brain and spinal cord, as in great grief or joy, or in case of severe but temporary pain. In such cases it may be looked upon as a means of relief, for if the excessive emotions or pain were pent up, the person might suffer severely from it.

But in other cases, whilst it tells of nervous irritability, the bodily movements give no relief, but even intensify the wrong, besides causing exhaustion. In these cases we endeavor to get bodily rest from the first, as a means of allaying the nervous excitation. Everyone will have noticed the influence of the physician, nurse or friend, who with kindness but firmness insists on keeping still. The hand placed upon the body of the sufferer to give support, seems to strengthen the will power, and frequently with an effort on the part of the patient comes rest and relief.

There is a case of restlessness from an enfeebled and atonic condition of the nerve centres that requires notice. The unsteady movement, or the evidence of exhaustion following it, with the anxious, depressed countenance, tells the story. In the other case we will find almost continued tension of the muscular system.

Whilst in the case of irritation and determination of blood we would employ the sedatives, with gelsemium, or remedies exerting a like influence, in that of atony we would use nux vomica, phosphorus, kali mur., avena, cactus, eupatorium aromat. and quinine.

Increased movement is not associated with structural, or even with severe local functional disease, so that unless it points to a wrong of the cerebro-spinal centers we do not regard it as an unpleasant symptom. In ordinary colic the patient is restless, and seems to get relief from motion, but in the severer forms of colic called "bilious," and in acute enteritis, he remains very still.

In local disease the patient favors the affected part in movement. Frequently the first evidence we have of morbus coxarius is the care shown in moving the leg and placing the feet in walking, and the elevation of the hip to remove pressure from the joint. Turning the toes inwards, both in movement and rest, has the same signification. One can readily distinguish a wrong of the pelvic viscera by the movement of the hips and

extremities, showing the constant effort to prevent stress or pressure of the parts. This will be noticed in some uterine diseases, (irritative), as well as in displacements. In chronic disease of the kidneys a forward curvature of the spine is frequently marked, and the patient is observed to put the hands upon the hips in rising from the chair, and sometimes in walking. If but one kidney is involved, or the liver or spleen, we observe the slight flexure to one side, and the effort to save the part from the movement of muscles. Evidently the drawing forward of the shoulders—"winged scapula"—is a symptom of similar import so far as the lungs or thoracic region is concerned. So certain is this, that with the marked falling forward of the shoulders and separation of the scapulæ, one may be sure there is some disease in the thorax. The head drooped forward has a similar import, though this is sometimes an indication of a wrong of the sympathetic nervous system.

In irritative disease of the cerebrum, or of the organs of special sense, the head is flexed, but in disease of the medulla oblongata, cerebellum, pons and crura, the head is drawn backwards. Forced extension, or head drawn backward, will be recollected as a prominent symptom in cerebro-spinal meningitis.

In all these cases flexion and favoring the part in muscular movements are evidences of irritative disease, and indicate the treatment. First, remedies that influence the affected part; and second, remedies that remove excited innervation and circulation or functional activity.

In another class of cases we find flexion from or opposite the affected part, and the position of the body and muscular motion are such as to give support and moderate pressure. The evidence in this case is of impaired circulation, congestion, effusion and enlargement. It is safe to say that in the majority of these cases the remedies will be such as will give additional stimulus.

If one will closely observe the movements of the abdominal muscles, they may determine conditions of disease in pelvis or abdomen. The careful, slight movement evidences disease of the pelvic viscera, if especially marked below; the chylopoietic viscera, if especially marked above. The full abdominal walls, with sluggish movement, evidences atonic disease and congestion.

If we examine with reference to the thorax, we will find that free movement of the abdominal muscles and diaphragm, and but slight movement of the upper thorax, is evidence of disease of the upper lobes of the lungs. On the contrary, thoracic respiration, with but slight and careful movement of the abdominal muscles, evidences disease of stomach or liver.

We have already examined the expression of the face sufficiently, and the movements of the muscles do not give much additional evidence. Twitching of the muscles is an unpleasant expression, and indicates undue spinal irritation or irritation of the basilar brain, the cause being frequently extrinsic. If of the mouth, our attention is directed to the abdominal organs; if of the upper lip and face, to the stomach; if of the nose, to the lungs; and if of the eyes and forehead, to the brain and spinal cord.

The quick involuntary movement of the eyes refers us at once to the excito-motor nervous system, and at once we make an examination to determine the source of the lesion, its cause, and adopt means to prevent its further progress, and convulsions. The forced contraction of one of the muscles of the eyeballs, turning them upwards, downwards, to one side, or causing strabismus, evidences disease of the brain, which may or may not be associated with wrong of the spinal cord. The character of the disease may be determined by the expression of the eyes and associate muscles, or by other symptoms.

In diseases of children we will notice that sudden contraction of muscles and movements of parts is a precursor of convulsions. The quick movement of the hand, with contraction of the fingers, the quick movement of the lower extremities, with forced flexion, or the quick movement of the head upon the pillow, or the sharp, jerking movement of the shoulder, should never be neglected.

Color is of much importance in diagnosis. The hue or color of the part being examined should, therefore, always be carefully observed.

Color in man has two sources—from the blood and from the pigment—and it is well to differentiate these. In the first case the changes of color are referred to wrongs of the blood; in the second they are referred to changes in the quantity or character of the pigmentary matter of the body. A simple division

would be into color which has red for a basis, and color which lacks red, is a shade of yellow, brown or black.

In making examinations with reference to the blood, we select parts where the circulation is free and the epidermis or epithelium is thin—where the skin is thin and the mucous membranes delicate. We examine the nails, the lips, the cheeks, the hands, sometimes the feet, the tongue, and mucous membranes of the mouth.

What is the color of health as shown from the blood? It is rosy, a light shade of carmine and lake, and is clear, transparent, and offers no darkness or admixture with blue, purple, or brown. As the finger is pressed upon the surface, or pressed over it, toward the heart, the rosy color is removed, leaving the structures clear and transparent, but the color comes back quickly when the pressure ceases. It is difficult to describe color in words, but if the reader will now make his examinations of health he may readily learn to distinguish the color of health.

The shade of rose color in mucous membranes differs somewhat from that of the skin, because it is modified to some extent by the pigment in the rete mucosum. It is well to get a clear idea of it by examination of the lips, the tongue, the mucous membranes of the mouth and fauces. The color of mucous membranes is quite changeable to a slight degree, even in health, having shades of blue, violet, white, probably from the secretions of the mouth and the food and drink; and we never regard these slight variations as diagnostic.

The pigment color of health varies in different races and in different individuals. But if we say it is somewhat transparent and clean, we may express its character for all races. If we take a negro, for example, we will find that the jetty black has a transparency and cleanness—glossy and smooth, which will be readily recognized. Let this man become sick, and the color grows dingy and opaque. If we take the olive or brown skin, the same cleanness and clearness of color is marked, and it seems so transparent that you may almost look into the skin. If you take the Caucasian, the brunette will show the same clearness in the skin pigment, and in the healthy blonde it seems as if you could look quite through the skin, it is so transparent. We may even notice these peculiarities in the color of the hair,

as it shows health and disease like other parts, but modified more by local conditions.

In studying color, especially that given by the presence of blood, it is well to note that it may be changed in quantity (so to speak) and in kind. Change in quantity has reference to an increased circulation and an increased amount of blood in the capillaries; change in kind, to the condition of the blood.

Simple *excess* may be noticed from any cause increasing the circulation to the surface or to a part. We observe this excess of color in slight acute diseases, where the activity of the heart is increased and there is general vascular excitement.

If a part of the surface shows this excess, we at once think of its relation to internal organs and functions. If of the upper portion of the face and eyes, we refer the wrong to the brain. If of the cheeks, one or both, we refer it to the respiratory organs or apparatus of circulaiton. If of the mouth and lower part of the face, we refer it to the abdominal viscera.

As the excess refers to vascular excitement, and means general sedatives, so these local excesses mean local vascular excitement and local sedatives if we have them. Thus for the brain it would mean gelsemium; for the thoracic organs, veratrum; for the abdominal viscera, aconite, ipecac, etc.

It is well to note the condition of the capillaries in this examination, and we may determine somewhat of their condition by the effects of pressure. If the capillaries are in normal condition, pressure should efface the redness, but it is but momentary. If the finger is drawn across the reddened surface, we notice the white line made by displacing the blood, but it rapidly passes away, and the blood flows quickly in and fills the vessels. If now we examine the redness in scarlet fever in the same way we will find that the finger carried over the part with pressure effaces the redness and leaves a distinct white line, more or less persistent, as the fever is severe.

This shows enfeeblement of the capillary circulation, especially from the arterial side, and is an indication for belladonna. If the capillary wrong is from venous obstruction, the color will be deeper, and the wrong will be associated with fullness of cellular tissue in many cases, and the white line made by pressure is not so clear. In this case bryonia and podophyllin are indicated remedies.

We not only find an excess, as above named, but in other cases a defect in color, showing poor blood, leucocythemia, or an impaired circulation to the surface. The pallor of anemia is shown in all parts of the body, and is associated with evidence of impaired nutrition. In the rare pathological condition, leucocythemia, there is sometimes marked pallor, but usually it is disguised by increase or change in the pigment of the skin. In deficient circulation to the surface we have want of color but no evidence of want of blood in totality, or impaired nutrition.

Deepening of color—*dark red*—is usually associated with zymosis, and has reference to sepsis of the blood. It is associated with asthenia, and when observed it tells of impaired function. But it especially shows the need of acids, and in this respect refers to a direct remedy. It makes no difference where we find it most marked, its meaning is quite the same, of course modified to some extent by local disease.

If the reader will think for a moment of the cases he has seen presenting deep redness of the surface, he will recognize the truth of these statements. In typhus fever the gravity of the disease is shown by the flushed skin—dark red. If in smallpox we find the skin assuming this dark-red color, we are confident the disease will be severe, showing depravation of the blood and marked asthenia. If we observe it in measles, we anticipate trouble from tardy appearance of the eruption, depravation of the blood, respiratory trouble and impairment of function. If seen in pneumonia, it talks to us of approaching "typhoid symptoms," of a low grade of inflammation and great prostration. So clear is the evidence, and so rare the exceptions, that it becomes one of the most reliable evidences of disease we possess.

The meaning is modified to a certain extent by the results of pressure—whether the color is solid and unyielding as the finger is pressed over the surface—or whether it is effaced by such pressure as heretofore named in simple excess. In the first case it has reference wholly to the lesion of the blood, in the other in part to the lesion of circulation—at least the evidence is less grave.

The dark redness is an evidence of sepsis and an indication for antiseptics. In such cases strict cleanliness must be observed

and good ventilation secured. Proper means must also be employed for disinfection.

If the dark-redness is associated with asthenia and impairment of life, and gives us timely warning of such impairment, it will caution us against the use of all depressant remedies, or anything that will impair any of the important functions of the body. And it suggests the necessity of keeping the stomach in condition to receive food, and the proper selection and preparation of food during the progress of the disease.

But it directly refers to *acids* as remedies, and this is of much importance. Acids here are the antiseptics and antizymotics, and muriatic acid is the indicated remedy.

The dull purple (bluish) of venous blood has reference to imperfect venous circulation and imperfect decarbonization of the blood. It may be caused by disease of heart or lungs; if not, we recognize a lesion of sympathetic and associate spinal nervous systems. It evidences an unpleasant condition of life, and one that should be removed if possible. In some cases the dullness of color becomes so marked that we designate it as leaden.

If we find local structural disease to acount for it, this will receive our attention. If it is sudden and associated with precordial oppression and constriction of the chest, lobelia and echinacea will prove useful. If less marked and chronic, we will think of cactus and pulsatilla. In acute cases chloroform counter-irritation around the lower margin of the thorax gives speedy and marked relief.

In the lesion of cholera we will find the blueness of hands and feet dependent upon enfeebled capillary circulation, the blood being loaded with carbonic acid gas. If the condition of the blood can be so changed as to enable it to circulate, this passes off. This blueness with pallor is one of the most marked indications for natrum muriaticum.

Want of color, with a shade of solid blue where the blood shows freely, as under the nails, the lips, the cheeks, and thin-skinned portions of the body, may be assumed to indicate the want of iron. Ferrum phosphoricum constitutes a pleasant form in which to supply this want.

A *violet* tint, with increase of redness, uniformly or only where the circulation is superficial, is a prominent indication for nitric acid.

Deep color, with purplish brown or black tinge, is a prominent indication for baptisia.

Color not deep, but muddy or dirty, of parts freely supplied with blood, is an indication for sulphurous acid. If there is this dirty shade with pallor, we would use sulphite of sodium.

When we come to study the local changes of color referred to the blood, we divide them into two classes, the one in which the change is to be referred to a lesion of some other part—sympathetic; the other in which it is dependent upon local disease. The reader will notice that the significance of color must depend very much upon this, for whilst the one may have no reference to the condition of the blood at large, or to any structural lesion, the other is wholly referred to the lesion of the structures and to changes in the blood.

We always want familiar examples to show that a method of study is likely to prove advantageous—that is, a basis of fact—and we will adduce the three familiar cases of change in the color of areola of the nipple, the dark line under the eyes in certain conditions of women, and the white line around the mouth in some intestinal diseases of children.

Every practitioner will have noticed the darkened areola of the nipple as an evidence of pregnancy, but may not have had his attention called to it as an evidence of disease of the reproductive function. In wrongs of this function simulating spermatorrhea we will find this change of color marked, as we will in scanty menstruation with congestion and in hypertrophy of the cervix uteri. Of course, we do not look for this except in the diagnosis of pregnancy, but in this case it is one of the most valuable symptoms.

If you should notice the deep color under or around the eyes in women, you would say at once there was a wrong of the reproductive organs or function, and you would rarely make a mistake. If the tissues seemed dry, the eyelids sunken and contracted, it would be safe to say that the disease was one of irritation, and would probably be relieved by pulsatilla and macrotys (especially if functional). If the eyelids were full, swollen, relaxed, that the disease was of congestion or atony, and would be benefited by hamamelis, apocynum, staphysagria, phosphorus, iron, etc.

If one should notice the white line around the mouth, with

full pallid upper lip, full or contracted mouth, he would at once refer the symptom to a wrong of the gastro-intestinal apparatus. The reference is undoubtedly right, if we except the rare case in which the symptom is dependent upon lesion of the brain. In wrongs of the stomach and bowels, if the structures are full, the abnormal condition is likely to be one of atony—a want of innervation and a sluggish circulation. If the structures are constricted and pinched, the wrong is very certainly one of irritation, excited innervation and circulation.

It is worth our while to carefully read the evidences of disease in the patient's face, especially when the indicated remedies are suggested by such reading. The white line around the mouth is an evidence of gastro-intestinal disease, and if there is fullness of tissue, podophyllin, hydrastis and santonin can be employed with advantage; but if the tissues are contracted, and there is thinning of structures, aconite, ipecac or gelsemium may be required. If we notice a peculiar bluish or leaden tint to this white line around the mouth, and see a slight dragging down of the corners, we would recognize a gastro-intestinal lesion which usually calls for bismuth, but sometimes minute doses of arsenic.

Increased color of cheeks has been known as a symptom of thoracic disease for thousands of years, but the nervous and vascular relations to this flushing of the cheeks are not easily explained.

A constantly recurring flush of one or both cheeks has reference to an irritable or diseased lung. The persistent high color, even though it be a distinctly circumscribed spot, has a different meaning. If we notice this circumscribed flushing of the cheeks, our attention is at once attracted to the respiratory apparatus. Associated with frequency of pulse and increased temperature, it tells us of commencing tubercular deposit. In this case the one cheek is usually flushed.

It may be remarked, further, that this symptom is always associated with a wrong of the sympathetic nervous system, especially in its relation to circulation and nutrition, and in phthisis we only find the bright, flushed cheek with irritation. Sometimes there is quite as marked pallor, and the evidence would be a want of innervation.

The bright-red flush of *left* cheek in acute disease is usually

referred to thoracic disease, but does not always indicate it. It evidences a lesion of sympathetic and spinal innervation, but is especially valuable as calling our attention to rhus tox. as the probable remedy.

The deeper flush of *right* cheek is more frequently seen in disease of serous membranes and fibrous tissues, but is especially valuable because it points out bryonia as the probable specific remedy.

The bright color of the cheeks, where it has reference to disease of the respiratory organs, tells us of irritation and activity of circulation, but the deep color indicates impairment of the circulation and of the life. The livid, purplish color in some cases of angina pectoris may be taken as the type. We have it in much less degree in thoracic aneurism, in apoplexy of the lungs, and in some very severe cases of asthma with congestion. The dark redness is always evidence of a difficult and imperfect circulation.

There is a *pinkish* color of parts freely supplied with blood that is regarded by some as an unpleasant symptom. As this color becomes more pronounced, we observe it in the veins as well. In women we may usually regard it as an indication of a menstrual wrong, which is likely to be corrected by the use of pulsatilla, actea alba, helonias, phosphorus and the hypophosphites.

Cutaneous veins in children which are prominent and show a constant and distinct blue line are a marked indication of feeble vitality and should prompt us to advise an abundance of outdoor exercise, good blood-making food, and that such children should not begin study early or be much confined until there is a stronger and more robust life. Unusual blueness of veins is a good indication for iron. If associated with pallor, the acetate of iron will be the indicated remedy, but if there is a deep color of the tongue the tincture of the muriate of iron should be employed.

The color of the conjunctiva and sclerotic will sometimes give us information in regard to the circulation of the brain. If we find an injected conjunctiva (not the result of local disease), we conclude that the cerebral circulation is similarly affected. If the color is bright and the surface looks smooth and moist, we have evidence of determination of blood. If the color is deep

and the surface looks dull and dingy, or dry and pinched, it represents hyperemia with obstruction to the return of blood—the apoplectic condition. The dull, colorless eye is the best indication for belladonna, though we use it when the eye is injected with tortuous vessels.

In superficial disease the color of the part is a means of determining its condition. If we take the ordinary symptoms of inflammation, increased color—redness—is one of the first named as constant. Given increased color with heat, pain and swelling, and we say there is inflammation. Of these, color will best give us the real condition.

If the color is bright, healthy red we know at once that the inflammation is simple, and is not very likely to work a very great wrong to the part, or to the body at large. It tells us of irritation, determination of blood, and of the activity of circulation; the second part of the wrong of circulation—stasis—is in but small proportion. In this condition general and local sedatives must be employed to get rid of the increased heat and establish secretion. The evidence is quite the same, whether we are looking directly at the inflamed part or at some distant surface that it influenced by sympathy.

If the color is deep-red and dull we are confident there is marked impairment of life and arrest of circulation. The fact is evident that there is too much blood in the part, that the capillaries are enfeebled, and the circulation in them is sluggish or arrested, that change has commenced in the stagnant blood, and that the life of the part will be destroyed unless these wrongs are corrected. In this case the circulation must be strengthened, the frequency of the pulse lessened, and the life of the blood conserved and sustained by rest and food. If a local application is to be made it is now *stimulant*—we want to strengthen the life of the part. If we select an internal remedy that is to influence the part from the blood, this remedy must be stimulant or tonic in its character.

If the part assumes a blue or purplish color we recognize venous stasis and an obstruction to the circulation from the part. With our attention called to the nature of the wrong we will find its cause and remove it if possible. In some cases, the wrong being general, venous impairment is cardiac. We do not know why, but we rarely find an impairment of the right heart

when the left is sufficient for the systemic circulation. Cratægus and echinacea will exert a very favorable influence in these cases. If there is fullness of cellular tissue apocynum may be associated with it or given alone. If the wrong is from venous impairment and is chronic, hamamelis is probably the remedy.

The erysipelatous redness is so distinctive that being once seen it can hardly be forgotten. The vivid coloration, evident dryness, shining appearance, give the beholder a sense of burning. It makes no difference so far as the significance of this coloration is concerned whether we have the local inflammation of the skin or not; it refers us to a lesion of the blood zymotic in character. If the surgeon finds this tint of vivid redness on the edges of a wound or the flaps of an amputation, he would at once be on the alert to get rid of the lesion of the blood. If the physician observed this erysipelatous flush on the cheek in inflammation of the lungs, or anywhere on the surface during the progress of an inflammation or fever, he might feel sure he would have a more than usually serious case to manage.

We may distinguish four shades of this erysipelatous redness, quite well marked in many cases, pointing out the remedies for the disease of the blood and the local inflammation. In the first the redness is quite vivid, and the edges of the local disease show a simple erythematous flush, and the part does not look dry and constricted. Sometimes there is arterial throbbing of the part and the pulse is full. In this case veratrum is the general and topical remedy. In the second case the redness is very vivid, and the parts dry and constricted, with sometimes the appearance of a slight pustular eruption. The pulse is small, sharp, vibratile; the remedy is rhus tox. In the third case the redness has a deeper shade, sometimes vivid, sometimes dull. The remedy, both general and local, is tincture of muriate of iron. The fourth case shows more or less of a blanched appearance as the disease advances—sometimes in the center, sometimes at the borders, sometimes of the deep structures—you seem to be looking through the superficial redness. In these cases the general remedy is sulphite of sodium, the local remedy sulphurous acid, permanganate of potassium or phenol.

The variations of *pigment* color in different individuals is so great in health that it might seem almost impossible to get definite information from its variations in disease, yet we will

find it is quite as certain as other evidences of disease. Of course, we must have a correct idea of normal pigment coloration and some guide to the natural tint of the individual. Transparency and cleanness are the characteristics of health whatever may be the shade. The lesions might be divided into those of excess, defect and perversion, though the last is the most important.

Excess of pigment, when it retains the clearness and transparency of health, is usually evidence of active life and good nutrition and excretion. Of course, outdoor exposure is always taken into consideration as causing an increase of pigment. Local excesses of pigment have a variable meaning, though if still clear and transparent we think of functional activity. If we take the areola of the nipple, the clean, transparent, deep color evidences healthy gestation, as does the deepened color over the gland. The increase of abdominal pigment has the same meaning, as has the increased pigment color of the vulva. Even the increased pigment of face observed during gestation is an index of healthy function. Not so the unequal and unpleasant brownish coloration known as *morph.*

The deep pigment coloration of the neck in brain workers is a sign of healthy nutrition of the nerve centers, whilst the want of pigment would indicate anemia, and the dirty pigment would show a wrong of nutrition.

The coloration of the skin and hair have the same associations. The clear, transparent color is the evidence of health, especially of the skin. The deepened color is evidence of an active life, especially of the vegetative functions; whilst a loss of color is at once referred to impaired nutrition. Even the color of the hair is subject to slight changes, and one may learn to distinguish by this the condition of the nutritive functions. It is an unpleasant sign to find the hair becoming dull and sickly in color.

There is an increase of pigment distinctly brown and in patches on various parts of the body which is known as "liver spots." They generally make their appearance on parts covered by the clothing, and may be quite large and extensive. We refer them to a wrong of the bile pigment, and frequently find it associated with a wrong of digestion and impairment of the function of the brain. The remedies indicated are podophyllin and hydrastis.

The brownish-yellow coloration is evidence of a wrong of the organs of digestion. We may find it only about the mouth or the face, or we may find it pretty general where the lesion is chronic. It refers us to nux vomica as the remedy.

Give us the same color, but dull and opaque, or with a leaden tinge of adjacent skin, and we again refer it to a lesion of the organs of digestion. The remedy is chelidonium; podophyllin if the tissues show more than usual fullness.

The bright yellow of jaundice is a symptom of wrong of the liver. What the condition of the liver may be other symptoms must decide. But in so far as the color is concerned, we expect to wash it out through the kidneys. Chionanthus and kali muriaticum are the needed remedies.

There is a peculiar sallowness with a tinge of green that indicates great impairment of blood-making and nutrition. The remedy is copper.

No one could mistake the opaque, tallow-like color of hypochondria and associate states. It tells us of impairment of the digestive and blood-making organs, of nutrition and of waste and excretion. There is a slow renewal of life, and the tissues are old and feeble. Very clearly in this case we want a more active "renewal of life," and we stimulate the processes of retrograde metamorphosis and excretion on the one hand, to remove the old structures, and, on the other, we see that the function of digestion is well performed that we may have increased nutrition.

One could hardly mistake the evidence of the dingy, dull, grimy, dirty color of skin. It refers us to a wrong of the blood —"bad blood"—and we conclude that the blood is as dirty as the skin. Of course, it would not do to mistake the dingy, dirty skin, which may be caused by a lack of cleanliness. In cases presenting this dirty color of the skin remedies to increase secretion, and sometimes to promote retrograde metamorphosis, hold the first place, though we do not forget the importance of improved nutrition.

There is a deepened tint of skin, dull and opaque, that is a very good indication for arsenic or phosphorus. The tissue seems to have lost life and is inelastic. Dullness of color and opacity may be regarded as the special features, and opacity where the color is lighter than usual may indicate the remedy.

If we have a distinct want of pigment, the want of color not dependent upon anemia or an enfeebled circulation of the blood, we think of sulphur as a possible restorative. Given in small doses, we sometimes find it exerting a marked influence upon the nutritive processes.

The color may be deepened in plethora and in the gouty heart with atheromatous arteries, causing the face to become very red. When the face is purplish there is venous congestion. This is seen in mitral disease, in dilatation of the left ventricle, in cases of embarrassment of the pulmonic circulation and in all cases where the right ventricle is overtaxed. As in cyanosis in babies, it indicates congenital malformation or imperfect development of the heart. Purplish congestion of the face, with hurried respiration in pulmonary phthisis, indicates much invasion of the lungs, and makes for a most unfavorable prognosis. An increase in the natural vascularity of the face, with a certain "blurring of the arteries" of the face, a fullness of the lips and alæ nasi, is found with organic changes in the heart in young patients, generally indicating mitral disease. It is also seen in some women at the time of the menopause, when they are not so well as usual, and there is a certain amount of vasomotor paresis with low arterial tension. By a careful observation of the features these cases may be differentiated. Circumscribed redness of one or both cheeks, with abruptly defined borders, is a diagnostic symptom of acute pneumonia. If it exist in a case of chronic pulmonary disease it denotes the so-called hectic fever and is a sign of phthisis. There is a peculiar blueness of the nose, lips and the skin over the cheek bones which is seen in some persons who habitually use chloral. It is a color unlike any other. The same hue may be seen on the hands of persons addicted to the drug.

Cases in which pallor is a very prominent characteristic are often seen. There is simple pallor due to anemia, whether caused by malassimilation or defective food, or by a drain on the system, as in diarrhea, menorrhagia, with or without leucorrhea, repeated epistaxis, or loss of blood from any cause. The color is more cachectic-looking, approaching the cancerous character in some cases of gastric ulcer, producing a marked waxiness. The cancer hue is slightly yellowish, yet distinct enough usually to be easily distinguished. In Bright's disease there is marked

pallor, with unnatural smoothness of the skin in some cases, as, for instance, in the case of middle-aged ladies or comparatively young men. In the older person the skin is wrinkled more than is natural for the age. In both cases it is abnormally dry and perspiration is not easily excited. There are cases of anemia in which the skin looks like parchment, much as if the subcutaneous fat had been absorbed and the dry skin tightly drawn upon the solid understructures, bringing out the temporal artery, usually tortuous, in strong relief. This condition has been observed in spare young men with syphilis and in spare old people with visceral cirrhosis. In the latter persons the hue is sometimes that of discolored parchment. In chlorosis the pallor has a greenish tint. This is seen in girls who have chlorosis, but who are at the same time possessed of an unusual quantity of fat. The pallor in malarial affections, when once recognized, cannot be easily mistaken.

In some diseases the color of the skin is decidedly changed. Such is the case in jaundice, for instance, where the skin is stained yellow with bile, and also in Addison's disease, where there is bronzing of the skin. The color of the skin in these two conditnos constitutes an essential part of the diagnosis.

Much may be learned by an accurate observation of the tongue. It will tell us of the condition of the digestive apparatus, the condition of the blood, the condition of the nervous system and of the functions of nutrition and excretion. The expression of disease may be found in its form, its condition of dryness or moisture, its coatings, its color, and its motion.

If we say that its condition may be taken as the type of the condition of parts below we will not be far out of the way. True, there are many exceptions, but the rule is a very good one and will hardly lead to serious error. The mind at once recognizes the changes of form, movement, condition, color and secretion as expressions of local disease. It will not be far wrong if it recognizes them expressions of disease of the entire digestive apparatus.

Change of form is quite expressive and rarely leads us into error. The *elongated* and *pointed* tongue expresses the condition of irritation and determination of blood to stomach and intestinal canal very distinctly, and it is safe practice to give it full weight and be very careful in the administration of remedies. As it is associated with excitation of the nerve centers, this is

to be taken into consideration when we value the evidence with reference to the stomach and bowels. If we observe this change of form early in the disease, we not only anticipate unpleasant gastric irritation through the sickness and use care in avoiding irritants, but we employ means to remove it. Among these may be named *minute* doses of aconite, ipecac and bismuth.

The *full* tongue, broad and thick, is an evidence of atony of the digestive tract, especially of the mucous membranes. In this case the stomach and intestinal canal tolerate the common medicines given, and the use of cathartics is less harmful and may be more beneficial than in others.

The *pinched, shrunken* tongue expresses a want of functional activity in the digestive apparatus. It is the tongue of advanced acute disease, and is usually associated with dryness. "Want of functional activity" hardly expresses the condition, for the life of the digestive apparatus has suffered to such an extent that there can be but little function. Whilst it is one of the indications of want of food, it causes us to be very careful in its selection and administration, giving small quantities at a time and at such periods as the unpleasant symptoms are least marked.

The fissured tongue in chronic disease points us to lesion of the kidneys inflammatory in character. In some cases the fissures are transverse only, but in severe cases they are somewhat irregular, and by pressing the tongue down it is seen to separate in irregular patches of prominent villi. The symptom is so definite that one may be assured of inflammation when this tongue presents.

The fissured tongue in the advanced stage of febrile diseases refers us to lesion of the kidneys or irritation of the nerve centers. In many cases we find a wrong in the secretion of urine, and close examination shows a condition of kidneys bordering on inflammation. It deserves careful consideration, and especially means to place the skin in better condition and to allay irritation of the cerebro-spinal centers.

The conditions of *dryness* and *moisture* are important evidences of the condition of the intestinal tract. If the tongue is dry, we are sure the stomach and intestinal canal can do but little digestive work, and we give it as much rest as possible. In such cases food is always given in fluid form, and usually above the temperature of 100° F. It is also carefully selected and pre-

pared that the labor of digestion may be as small as possible. If the tongue is dry we are confident there is want of secretion from the intestinal canal and associate glands, and, indeed, that there is a condition present which will prevent the action of direct remedies to favor secretion. It is most absurd to employ cathartics in such cases, unless the object is simply to remove irritant accumulations. Moisture, on the contrary, expresses a condition favorable to functional activity. True, there may be impairment of function, as when the tongue is full, showing atony, or heavily coated, showing increased mucous secretion, or dirty, showing depravation of the blood and secretions.

If in acute disease with dryness of the tongue we observe it becoming moist, we are confident of improvement, of the establishment of secretion, and, indeed, of all the vegetative processes. Having this meaning, it is nearly always regarded as a favorable symptom.

The coatings of the tongue should be observed with care, as they are believed to be symptomatic of many diseases of the digestive tract. An eminent writer, in referring to this subject, in part says:

"The question appears to be capable of being resolved into three principal divisions:

"1. What are the nature and causes of the alterations in the tongue which have been regarded as diagnostic of affections of the stomach?

"2. In what other diseases, occurring independently of stomach affections, are these changes observed?

"3. What is the nature of the alterations of the digestive organs with which these conditions of the tongue have been found to be associated?

"The appearances of the tongue which have been most commonly believed to be associated with the diseases of the rest of the intestinal canal are an increase of its epithelial covering, which may present various degrees of thickness and different shades of color; enlargement of its papillæ; various shades and degrees of redness of the mucous membrane, and certain alterations in its size and shape.

"The fur or coating has been shown by microscopic examination to consist of epithelium scales, which are often fattily degenerated, and sometimes massed together, of free fat drops, and of confervoid growths; of these the largest proportion is formed of the epithelial cells which are derived from the covering of the organ together with the saliva and buccal mucus, which in

drying form a thick glutinous material, conglomerating the other elements into a mass.

"The fur may be of greater or less thickness, dry or moist, uniform, or accumulated more particularly at the posterior portions. It is sometimes deeply fissured by sulci, which may extend into the mucous membrane beneath. At other times it may separate in flakes from the surface, which then may look raw, and of a deeper red than natural, but which may, when the process of separation is gradual, present no deviation from the normal appearance.

"Mixed with the fur may be sometimes found pigment, blood corpuscles, mucous or pus corpuscles, or the remains of vegetable and animal portions of food.

"The color may be white or milky, or may present various shades of yellow or brown.

"The nature and cause of some of the changes in color are very imperfectly understood. Some of them arise from articles of food, medicinal substances, tobacco, etc.; a large proportion, however, are caused by slight hemorrhages from the gums; while some others, and especially those occurring in fevers, remain unexplained. Excepting, however, those cases where there is direct pigmentary discoloration from jaundice, when other tissues participate in the change, there is no foundation for the common belief that a yellow fur on the tongue has any necessary connection with hepatic disorder.

"As regards the chief causes to which the production of this fur is attributable, may be mentioned:

"Idiopathic conditions in which the tongue of some persons may consistently, with apparently perfect general health, form and throw off a much larger amount of epithelial covering than is ordinarily the case; inquiry should, therefore, be directed to this point before any general conclusions are formed respecting the indications to be drawn from its presence.

"States in which a coating is formed on the tongue by the simple drying of inspissated mucus and saliva, owing to the mouth being kept open, as is often the case during sleep.

"Conditions of irritation in the mouth itself, giving rise to an increased production of epithelium on the cheeks, gums and tongue, and which, from their similarity to the state of other mucous membranes, where increased secretion, attended with shedding of the epithelial covering, is the result of irritation or subacute inflammatory action, are usually termed catarrhal. The belief that this is the true pathology of this state is also favored by the coincidence, in many such cases, either of a general redness of the surface, beneath the thickened epithelium, or of hyperemia and enlargement of the papillæ, especially of the papillæ fungiformes of the lateral and anterior portions. In

some instances, also, the inflammatory state is further evidenced by the production of aphthæ, giving rise to slight and superficial ulcerations, with a reddened base, and often surrounded by a reddened margin.

Many of these conditions of the tongue may, however, be due to local causes, such as carious teeth, or other sources of irritation to the fifth nerve, or to accumulation of food around the bases of the teeth, or to medicinal agents affecting the salivary glands and mouth, as iodide of potassium and mercury, or to the habit of smoking (though this does not ordinarily produce a thickened epithelial fur, nor hyperemia of the papillæ fungiformes, its effects being generally limited to an enlargement of the papillæ filiformes, which gives to the surface a finely roughened aspect). As smoking, however, is not an unfrequent cause of stomach affections, our observations on this head are always attended with certain grounds of fallacy."

Although there is undoubtedly more or less error in the commonly accepted ideas in regard to the coatings on the tongue, much may be learned by carefully observing them.

The vivid whiteness of the tongue, evidently a change in the epithelium, evidences simple functional wrong, and is associated with the febrile state. If observed at other times, it may be taken as an indication that the stomach and digestive tube need rest.

The thin, transparent, mucoid coating of the tongue, evidently upon and from the secretions of the mouth, is an evidence of enfeebled digestive function, frequently from intemperate eating or drinking.

Sometimes the tongue appears much swollen and has a thick, white coating, suggesting the need of calcarea phosphorica.

A flabby tongue, with yellow coating at the base, is indicative of a wrong in which calcarea sulphurica is employed with beneficial results.

When there are ulcers in the mouths of little children or nursing mothers, and the tongue is covered with a grayish-white coating, kali muriaticum is called for as the leading remedy.

Cases are often seen in which the edges of the tongue are very red and sore, and at the same time the tongue is covered with a slimy brownish coating. The direct remedy in the condition here represented is kali phosphoricum.

When the tongue has a slimy, yellow coating and its edges are whitish in appearance, kali sulphuricum will exert a needed influence.

A bright red and sore tongue, which is coated white and has a smarting sensation, calls for magnesia phosphorica.

When there is great dryness of the tongue and there are numerous vesicles on its tip, natrium muriaticum is of great usefulness.

A moist creamy or golden yellow coating on the back of the tongue is often seen. The condition causing this peculiar coating is opposed by natrum phosphoricum.

When the tongue is covered with a dirty, brownish-green or grayish-green coating, and the palate is very sensitive, there need be no doubt of the demand for such remedies as natrium sulphuricum and sodium sulphite.

The *fur* which has consistence—is evident upon the tongue and can be scraped off—evidences impairment of function, and the wrong is generally in proportion to its thickness. If uniformly distributed it may be regarded as having reference to the entire intestinal tract; if restricted principally to the base, we think of greater wrong in the stomach. The *heavily loaded* tongue would call our attention to accumulations in the bowels, and would prompt to means (mild) to secure their evacuation. The *heavily loaded* tongue at the base calls attention to accumulations in the stomach, and suggests the use of an emetic to free this viscus and stimulate normal innervation and circulation.

Yellowness of coating is thought to arise from wrong in the hepatic function, and to point to the use of "liver remedies." Whilst it may have this reference in some cases, it is well to avoid the usual cholagogues. It may be said to call for nux vomica, small doses of podophyllin and hydrastis. A dull, leaden, yellow fur is an indication for chelidonium. A dull, cheesy looking fur, with slight green tinge, is an indication for copper.

The bright redness of tip and edges, especially of papillæ, is an evidence of irritation with determination of blood. It always suggests care in the use of remedies, rest to the stomach, and the special agents named to remove irritation. A good condition of stomach is of first importance in the treatment of disease, and when these symptoms present these means will hold a prominent place.

The tongue gives us the best evidence of the condition of the blood and of the remedies which rectify its wrongs. All exuda-

tions or secretions from the blood must give information of the character of this fluid, and there is no better place to observe them than in the mouth. The circulation of the blood is also very free and superficial in the tongue, and we are thus enabled to observe its changes of color better than in other situations. The reader will recollect the distinction between the tongue itself and the fur or coating, when color is spoken of, as the one is from the circulating blood and the other from the exudation.

The *broad, pallid* tongue—marked want of color in the tongue itself—evidences the want of the alkaline elements of the body. The evidence is clear and distinct, and the want one of much importance. It may be the basis of the entirety of the disease, which will fade away as soon as the proper alkali is given, or it may be but a portion of the wrong, and the alkaline salt prepares the way and facilitates the action of other remedies.

If there is no special indication for some other, we prescribe sodium because it is the salt of the blood. Usually the bicarbonate of sodium in small doses will be indicated. If there is predominant wrong of the muscular system, we may select a salt of potassium. Kali phos. will often be indicated. If of the cellular tissue, a salt of lime.

The *deep-red* tongue (usually contracted and dry) evidences the want of an acid, as well as that condition of the blood known as "typhoid." Here, as in the preceding case, the want of an acid (undue alkalinity of blood), may be the principal element of disease, and all the symptoms are ameliorated and the patient convalesces when it is given. In other cases it is but a portion of the disease, and the acid facilitates the action of other remedies. It is a very common symptom in typhoid and typhus fevers, and the use of an acid in these cases has been found a very successful treatment by many eminent physicians. In this case we select with reference to the stomach and the blood poisoning. Muriatic acid usually receives the preference, as it is well borne by the stomach and is a powerful antiseptic. It should be given in small and frequently repeated doses. In some other cases lactic acid, in the form of whey, answers an excellent purpose, as it furnishes a calorifacient food as well.

The deep red or deep violet colored mucous membranes, with fullness, evidences sepsis, and is an indication for the special remedy, baptisia. The acid should also be given in some cases.

The full color, with *violet* shade, superficial and transparent, is the indication for nitric acid, and it will be found one of the most valuable remedies of the materia medica.

The tongue large, thick in center, with incurved edges, and of a dull blue or leaden color, is one of the strongest indications for arsenic, and it will rarely fail to arrest the progress of disease in such cases.

The same dull, leaden color, with no change in size or shape of the tongue, is one of the best indications for the use of phosphorus or the hypophosphites.

The *slick,* raw-beef tongue, the papillæ wholly effaced, evidences sepsis of the blood, and is one of the most marked of the "typhoid" symptoms. The color of the tongue is usually deep, and we will employ an acid and baptisia.

The exudation or fur upon the tongue is a pretty good index of the condition of the blood. Of course, we must weigh the influence of local disease of the mouth and teeth, and the sympathetic relations with the stomach and bowels, as heretofore named.

The *dirty* fur is an indication of sepsis of the blood as well as of depravation of the secretions. It is frequently associated with moisture and the redness is rarely increased. We use the common word "dirty," because it expresses our meaning clearly —the impression upon the senses is that of dirt, and its meaning is dirt. It may be a dirty-white, a dirty-gray, a dirty-yellow, or a dirty-brown, but the dirty, grimy appearance always assumes prominence in the mind.

If we have a dirty tongue, pallid, we usually think of sulphite of sodium. If the redness is natural, we may use sulphurous acid or sulphite of magnesia. If dirty, with increased redness, muriatic acid. If the coating is of a dirty, brownish-green or grayish-green color, natrium phos. will prove the needed remedy.

All shades of brown and black have reference to the condition known as typhoid. We have every shade of color from the slight tinge of brown to the deep brown or almost black. It is not only the coating of the tongue that shows this color, but accumulations of sordes about the teeth, and sometimes crusts upon the lips. As is the deepness of color, so is the wrong known as "sepsis," and so is the need of the class of remedies known as "antiseptic." As is the deepness of color, so is the

impairment of life, and the need of care and rest to conserve it, and of food and restoratives to support it.

These dark coatings are so usually associated with deep redness, that we usually think of acid remedies, first of which is muriatic acid. But some of the cases will need baptisia, and in others echinacea will be indicated. Cleanliness is of especial importance in these cases, as all decomposing animal matter in the air or surroundings increases the wrong of the blood.

The reader may not have thought that the tongue could tell him much with regard to the condition of the nervous system, and yet a little study will show that it does give very important evidence. It has special reference to the condition of the sympathetic nervous system, and this may be regarded as the most important, but we also learn much of cerebro-spinal innervation.

We associate *dryness* of the tongue with excitation of the nerve centers, especially the ganglionic. So positive is the evidence that it is not possible to mistake it. Dryness of tongue is associated with vascular excitement and with arrest of secretion from this cause. If in acute disease, with dryness of tongue, we find it becoming moist, we know that the nerve centers are being relieved, and that the circulation is improved and secretion is commencing. If in a case of disease marked by enfeebled innervation from the sympathetic, and moist, relaxed tongue, the tongue commences to dry and becomes firmer, we know that the nervous system has been stimulated, and many times it is a first evidence of amendment.

Whilst dryness always evidences undue excitement of the nerve centers and calls for sedatives, or that class of agents which remove this, too much moisture and relaxation is evidence of the opposite condition. Dryness of the tongue is a reliable indication for natrium muriaticum. Moisture of tongue is one of the prominent conditions assuring us of the kindly action of quinine, and even of opium when indicated. If marked, and accompanied by full, relaxed tissues, the patient always requires nerve stimulants.

Contraction is always an evidence of an excited nervous system. Sometimes, indeed, we may measure the wrong of innervation by this symptom, as in typhoid and typhus fevers and in the later stages of acute disease. The reader who has seen the great nervous wrongs of these affections, will recollect the

pinched, contracted tongue as one of the prominent symptoms.

Fullness of tongue has the opposite meaning. If marked, we are quite sure that innervation is impaired from atony or want of normal stimulus of the nerve centers, especially of the sympathetic. It suggests nerve stimulants as a part of the treatment, podophyllin and cratægus for the solar and cardiac plexus, and nux vomica, strychnia, belladonna or ergot for the associate sympathetic and spinal nervous systems, with quinine for the associate wrong of the three, or simply for the brain alone.

Whilst the elongated and pointed tongue has especial reference to the stomach and intestinal canal, it is one of the expressions of disease of the base of the brain. It is well to note this fact, for we may have the wrong of the brain as the primary lesion, the nausea and vomiting being but the result, and if treatment was directed wholly to the stomach we would make a great mistake. Gelsemium assumes a prominent place here, associated either with veratrum, aconite or ferrum phosphoricum.

The small tongue, full in the center, which is covered with a thick, tenacious mucoid coat, is an indication of marked disturbance of the brain, unless we have evidence of acute disease of the ears, the globes of the eyes, or the sphenoidal or ethmoidal cells. It may indicate a very grave lesion, or in the latter case will pass away with the local disease. In those cases where the coating is removed, the surface is left slick and very dark colored.

The tongue covered with a grayish or yellowish fur, showing small patches of red distributed uniformly over the surface, is the tongue of scarlet fever. The same appearance will be seen in other cases where the capillary circulation of the skin is enfeebled. In these cases kali muriaticum and belladonna will markedly benefit the patient.

The eroded appearance of the papillæ at the tip of the tongue, looking like small rose-colored bubbles, evidences a peculiar wrong of the nerve centres and of the blood, for which rhus toxicodendron is the remedy.

The movements of the tongue are sometimes of importance in determining the condition of the brain. If the patient has complete command over it, we conclude that the functions of the brain are still well performed. But if it is protruded with difficulty, is tremulous, or is inclined constantly to one side, we are

confident we have a proportionate cerebral lesion. Whilst we might get the evidence elsewhere, it is quite as well to give weight to these symptoms, and, when observed, to adopt means early for the relief of the brain.

From what has been said the reader will draw the conclusion that impairment of nutrition and secretion will be indicated by marked dryness and contraction on the one hand, or increased moisture and relaxation on the other. In the first case there is undue excitation, and if we select remedies to increase secretion or excretion they will be of a sedative character. In the other case there is a want of innervation, and the remedies will be those which will give stimulus and tone.

There is a sodden, unpleasant looking tongue, which is quite as good evidence of cacoplastic material in the blood as any we can find. We recognize at once the evidence of enfeeblement of the digestive functions, and if there is local irritation we expect that the exudate will be of this character, readily breaking down and destroying the tissues. In some cases of hectic fever during long suppurative processes, the tongue becomes indurated, suggesting the need of small doses of silicea.

In an article on the importance of carefully studying the condition of the tongue in our examinations of the sick, Prof. J. M. Fothergill, in substance, says:

When seen in the early stage of typhoid fever, a tremulousness of the tongue indicates a grave condition. In advanced stages the tongue is protruded slowly and with difficulty, indicating impaired power over the muscles. In hemiplegia the tongue, when protruded, turns its apex to the paralyzed side, as a result of decreased power in the genio-hyoglossus muscle of the affected side. In glosso-labial paralysis the capacity to protrude the tongue is impaired or lost. In facial paralysis, without hemiplegia, this loss of power to protrude the tongue tells that the wrong is central and within the skull, and not peripheral, or Bell's palsy.

Dryness of the tongue is found in pyrexia. The tongue is also dry in diabetes and other conditions of polyuria, and in some of the functional wrongs of digestion it becomes dry and hard, as well as brown, from the accumulation of dead epithelium cells upon it in the typhoid condition and in uremia. The tongue becomes indented and marked by the teeth in some conditions of

debility from menorrhagia, chronic diarrhea and in acute prostration. A coated tongue is constant with some individuals who are apparently well and strong, and a furred tongue, especially in the morning, is common with excessive smokers. Usually a coated tongue denotes a disturbance of the digestive organs or the beginning of acute fevers. When the coating has a distinctly yellow or brownish color, there is usually a bad taste in the mouth on awakening in the morning. The taste and the color are due to taurocholic acid. The coating on the tongue in this case consists mainly of dead epithelial cells, mucus, particles of food, and dust inhaled by the breath. As a rude index of the condition of the gastro-intestinal canal, the state of the tongue furnishes valuable information. Where the coat is thick it is evident that absorption of food in the intestines must be very imperfect, through the layer of dead epithelial cells, and our efforts should be directed to the removal of this obstructive layer. Consequently, we inspect the tongue in acute diseases, and in convalescence, in order to ascertain as nearly as possible whether the state of the intestinal canal is such as will permit of the assimilation of the food and medicines taken. When the tongue clears we know assimilation is going on satisfactorily. When the tongue remains coated, we endeavor to aid in the natural efforts to remove the coating by such means as may be indicated by the symptoms. In protracted illness the coating on the tongue may be shed and reproduced several times. After acute diseases, and especially after fevers, the coating may disappear little by little, commencing at the tip and creeping along the edges, leaving a thick coat up the mesial line and upon the base, which gradually disappears as secretion is re-established. In scarlet fever the tongue often assumes a strawberry appearance. Sometimes the red papillæ stand out upon a red surface like a ripe red strawberry, and at other times the red papillæ stand out upon a coat of fur, like the seeds of an unripe white strawberry. A coated tongue is common in many cases of dyspepsia, especially when many by-products of digestion are formed in the digestive act. Both in indigestion and in artificial digestion there are by-products formed, as well as peptones, and these by-products are often very offensive. In some cases of acid "heartburn" the chief offending agent is butyric acid.

The tongue may be coated along one side only. or it may

be raw and irritated. The raw, or bare, tongue has not received from medical writers the attention which should be given to it. In this condition the superficial structures of the tongue are denuded, more or less completely, of the natural epithelium. In convalescence from acute diseases, where the tongue has been coated, sometimes it is abnormally red and imperfectly covered with epithelium. Here a coat is very likely to form again. The absence of the normal epithelial covering of the tongue, whether slight or extensive, should receive the most careful attention of the physician. As long as the tongue is raw or bare the line of treatment should be that of bland food, with mild sedatives to the gastro-intestinal tract. So long as this condition remains, tonics and stimulants are useless, and may even do harm. It is in phthisis, perhaps, of all diseases, where there is this rawness of the tongue, that the greatest apprehension should be excited. The rawness is not usually complete over the whole tongue, but it often forms a large patch in the middle of the tongue, the irregular edges usually extending farther on one side of the mesial line than on the other. There is every reason for supposing that this condition of the tongue is an indication of the state of the unseen portion of the gastro-intestinal canal, and that the absence of the epithelium interferes with assimilation. It is for this reason that this condition excites apprehension in all wasting diseases. Not only is the epithelial layer important in the absorption of nutritive material from the food in the intestines, but it is essential to secretion. This fact is well pointed out by Prof. M. Foster when he says, in substance:

The food, in passing along the alimentary canal, is subjected to the action of certain juices which are the products of the secretory activity of the epithelium cells of the alimentary mucous membrane itself, or of the glands which belong to it. These juices (namely, saliva, gastric juice, bile, pancreatic juice, succus entericus and the secretion of the large intestine) poured upon and mingling with the food, produce in it such changes that, from being largely insoluble it becomes largely soluble in an alkaline fluid, such as blood, or otherwise modify it in such a way that the larger portion of what is eaten passes into the blood, either directly by means of the capillaries of the alimentary canal, or indirectly by means of the lacteal system, while the smaller part is discharged as excrement.

Now, if Prof. Foster is correct in his conclusions, and it is generally conceded that he is, it is abundantly clear that any deficiency in number or perfection of these epithelium cells must exercise a deep and profound influence upon digestion, absorption and nutrition. The physician's greatest energies should, therefore, be directed toward the restoration of the epithelial layer to normal perfection, or the nearest approach thereto. If, under judicious treatment the tongue assumes its normal appearance, and the epithelium once more grows freely upon it, then we know that the digestive powers are returning, and that tonics and more food of a less restricted character may be safely employed. So long, however, as the raw condition of the tongue continues, so long must we direct our therapeutic measures to the restoration of the epithelial layer of the alimentary canal to its normal condition. The tongue may present a beefsteak appearance when it is denuded of epithelium, as it is likely to do when the brown fur of the typhoid or uremic condition has been shed.

The epithelial layer of the tongue is often suggestive of other conditions than those of the alimentary canal. There is a peculiar silvery sheen of the epithelial covering of the tongue in many cases of menorrhagia, especially when the tongue looks swollen and shows the indentation of the teeth. In relapsing fever there is often a small triangle on the tip of the tongue, much cleaner or more raw than the rest of it.

The surface of the tongue may be altered, and the mucous membrane be ulcerated, as in stomatitis, or it may be fissured. It may also be the seat of a chancre, which must be differentiated from cancer.

CHAPTER VIII.

DIAGNOSIS BY THE SENSES OF HEARING AND TOUCH.

IN diagnosis, the sense of hearing, when trained into associate habits with the senses of sight and touch, constitutes an indispensable factor. This sense, like the other human senses, is capable of becoming wonderfully developed. As an evidence of this fact, it is said of an eminent physician that his sense of hearing had become so acute that he often made the correct diagnosis before seeing the patient, the ear identifying the disease

from the gait of the patient as he approached the doctor's consulting-room.

The wrongs of life find expression through the usual channels of expression; where the nerve currents have been most in the habit of flowing in health they incline to flow in disease. Mankind use the facial muscles to express their feelings or sensations, and hence disease is expressed in the face. For the same reason we should expect to find wrongs of life expressed in the voice in all animals using the voice, and especially in man, who finds it a principal instrument of expression.

As we enter the sick-room we give attention to the voice of the sick person quite as much as we do to what he is saying. We find that it expresses strength or weakness, is free or difficult from local disease, and shadows forth the condition of the brain in its tone, which varies from the listlessness of atony to the querulousness of excited feebleness and the excitation of over-activity.

In studying the voice as the expression of disease, we recognize its threefold bearing as it refers us to a general impairment of life, a lesion of the brain, and to lesions of the respiratory apparatus. If we did not keep these sources of wrong in view we might make serious mistakes. If, for instance, we have feebleness of voice, it may be due to general impairment of life, to impairment of the functions of the brain, to deficient innervation from the spinal cord, or to a lesion of the respiratory apparatus.

Whilst *strength* of voice is usually regarded as evidence of good vital power and a good respiratory apparatus, it will not do to place too much dependence upon it in these regards. It certainly evidences good innervation from the brain and spinal cord. But if these nerve centres are sound, active, and well supplied with blood, we may have a strong voice, even though the body at large is nearly exhausted. Usually it is a favorable symptom.

Feebleness, on the contrary, evidences a lesion of atony, either of the body at large, of the brain or mind, of the spinal cord, or of the respiratory apparatus. Whilst the probabilities are in favor of its being a nervous lesion, we will not take it for granted, but make such examinations as will localize the lesion. Feebleness simply, without querulousness, suggests the use of phospho-

rus, the hypophosphites, cod-liver oil, iron, arsenic or quinine. If it is associated with a marked effort of the will, and a sighing respiration, we refer it to deficient innervation from the spinal cord, and think of strychnia, ergot or santonin as remedies. In lesion of the respiratory apparatus there will be change in the voice other than feebleness.

It is difficult to give a name to the peculiar expression of voice associated with nervous irritation and vascular excitement, yet the reader will learn to recognize it readily, and may frequently be able to determine these characters by simply hearing the patient speak. There is a sharpness and want of smoothness, representing pretty accurately in degree the amount of disease.

The halting voice, evidencing a labored action of the brain, tells the story of congestion, and suggests the use of belladonna.

The oppressed voice, hollow and unsteady, evidences a general impairment of life, and calls for stimulants, tonics and food.

The oppressed voice from the upper part of the lungs suggests deficient innervation to heart and respiratory apparatus, and causes us to think of cratægus, and in some cases of stimulant doses of lobelia.

Sharpness of voice suggests nervous excitation, and will sometimes point to *the* remedy, as in the peculiar sharp accentuation of the rhus voice, resembling the *cri encephalique* of the child.

The cry of the child will frequently inform the physican of the location and character of the disease. Of course, we recognize the fact that there may be but little change in the cry, or that there may be changes without corresponding disease, but we have other means of diagnosis to supplement this and prevent error. Physicians who have given this subject attention will recall the peculiar cry of abdominal distress, the change which marks disease of the respiratory apparatus, the oppressed cry of congestion, the shrill metallic cry of inflammation of the brain, etc. It does not take much observation to distinguish the cry of disease from the cry of hunger or anger.

In the preceding paragraph a peculiar cry, *encephalique*, was noticed, which is so distinctive that it will never be mistaken. Its suddenness and shrillness is characteristic. In its slighter forms it arises from cerebral irritation and determination of blood, and calls for gelsemium as the remedy. When marked and shrill, rhus tox. should be added to the prescription.

A sudden cry followed by sobbing respiration is a prominent indication for bromide of ammonium..

The voice is the function of the larynx, and its changes will point us to disease of this organ. The croupous cry and voice is quite as distinctive as the croupous cough. If it evidences moisture, we have mucous croup; if it is dry and metallic, pseudo-membranous croup; if variable in tone and character, spasmodic croup.

In chronic disease of the larynx roughness of the voice is one of the first symptoms. As the disease progresses, we have various changes in the voice, and difficult use of it, as characteristic symptoms.

In chronic bronchitis we also find change, but not similar in kind. It may give the voice shrillness, as in irritative bronchitis, or dullness, hollowness or reverberation, as in asthenic bronchitis.

The sense of hearing is of the utmost diagnostic value in coughs. Without a well cultivated sense of hearing many coughs would be incomprehensible.

A cough is usually an expression of disease of the respiratory apparatus; and of all the features, physical and mental, which make up the sum total of a consumptive, cough is the most distressing and prominent symptom. Cough may, however, have its origin in diseases other than those of the respiratory organs. For instance, we find cough from gastric, biliary and intestinal lesions, and from diseases of the nerve centers, and our examination is made with reference to these probable causes in obscure cases.

Cough is the expression of irritation, and comes from the sense of an irritant material in the respiratory passages, which it is intended to remove. But many times there is nothing to be removed—it is a misconception of the respiratory nerves, which suffer from irritation, and we wish to determine whether or not the effort is to be favored. In the larger number of cases expectoration is undesirable, and if we remove the irritation of the nerves the cough ceases.

A little attention upon the part of the physician will determine this point, as it is quite easy to distinguish the cough necessitated by increased secretion, and attended by expectoration, from the inefficient, rasping cough of irritation. In either case, but espe-

cially in the last, an effort of the will is of marked benefit in checking cough.

The character of the cough expresses to some extent the condition of the respiratory passages. If dry, ringing, metallic, we think of irritation, determination of blood, and arrest of secretion, and the remedies at once suggested are those which allay irritation, check determination of blood, and favor normal secretion. If moist, rattling, gurgling, dull, stimulants to the respiratory passages, as well as remedies to relieve irritation, are suggested.

A cough is more or less forcible, and more or less under the control of the patient. If forcible, not under control, or explosive, we at once suspect a wrong of the nerve centres, usually of the basilar brain, and select remedies accordingly. Of course, we may have such uncontrollable cough from local irritation, especially of the throat, but this will be readily recognized by the expression, as well as from the patient's sensations.

A cough has more or less evidence of strength, both of the respiratory apparatus and of the body at large. The strong, well-sustained cough may be a source of annoyance, but evidences good vitality and a naturally good condition of the respiratory organs. A feeble cough, on the contrary, is the evidence of debility, and at once suggests the necessity of care in the conservation of life, and the employment of means which will give strength, especially the selection of proper foods. A cough may be feeble from deficient spinal innervation, and spinal stimulants would prove the best remedies.

Coughs are spoken of as short, hacking, deep, bronchial, etc., and these characteristics may suggest the locality of disease. A short cough may arise from disease of the upper lobes of the lungs, or it may be due to disease of the parenchyma of the lung, as in the first stage of a pneumonia. The hacking cough evidences irritation of the respiratory nerves pointing in the throat. The deep or bronchial cough is at once referred to lesions of the bronchial tubes, though it is not as good evidence as we would wish.

A cough may have its origin in irritation of any part of the respiratory apparatus, from the pharynx, larynx, trachea, bronchial tubes, parenchyma of the lungs, to the pleura. As named above, its character may suggest the seat of disease, but, as a

rule, it is not definite. A singular thing about coughs is that the irritation points so that the patient can localize the sensation of irritation for us. Cough very frequently points in the pharynx, and the irritation of the throat seems to be its direct cause; such a cough is based to a considerable extent upon the irritation of the respiratory nerves, and remedies directed to relieve this will be the best cough medicines. In other cases cough points about the suprasternal notch, and, if very severe and persistent, suggests the use of remedies which influence the sympathetic nervous system, as veratrum, bryonia, cactus or pulsatilla.

Coughs may be spasmodic and paroxysmal, even in severe cases showing distinct epileptiform symptoms. Whooping-cough is the typical spasmodic cough, but we have in the cough of measles, and some diseases of the respiratory apparatus, the same characteristics. It suggests drosera, belladonna, bromide of ammonium and magnesia phosphorica.

Through our sense of hearing we are able to obtain much information from the patient and nurse. While this information is often of value, we should ever bear in mind the fact that in its source the elements of uncertainty are very great, and that it will be well, therefore, for us to pursue our inquiries with much care. Questions should never be suggestive, but should be so put as to let the nurse or patient tell what they know, or to require but the simple and direct answer, yes or no. Careful attention to these points, and a continued guard upon the tongue, will soon form a habit of examination that will lessen the danger of erroneous information.

We prefer to get information from attendants with regard to the general condition of the sick, and the performance of the essential functions of life. From the patient we desire to know his sensations, as these are changed by disease.

A first examination may take the following course: How long sick? What are the seeming causes of the sickness? How did it commence? What has been noticed with reference to the progress of disease up to the present time? How does the patient rest in the daytime? at night? What food and drink does he take? How often does he have a motion of the bowels? How does he pass urine? These questions may seem suggestive, and once in a while they may take a simpler form, as: Does he sleep? Does he eat? Does he drink?

It is most absurd for the attendant to attempt a description of the sensations of the sick, and yet they almost always volunteer to do it. Many times they will be continuously making suggestions to the patient, and lead him into erroneous statements. They will probably have formed some theory of the disease, and will bend everything to the support of their theory. Physicians are very frequently guilty of this, and should try to rid themselves of the bad habit which they condemn in nurses.

The question, How do you feel? elicits a loose, wandering description of the patient's sensations, and is only important in that it suggests special questions and examinations. The question, Where do you feel bad? is pertinent, and will elicit valuable information of local disease. It does not do to take it for granted that the patient's anatomical or physiological knowledge is perfect, and that his reference to heart, lungs, stomach, liver, etc., means heart, lungs, stomach, liver. The direction at once follows—put your hand on the place. It is a little singular to find after a patient has located a disease in his own mind, the hand meanders about with uncertainty trying to find its location. If the unpleasantness is marked and means local disease, the patient has no difficulty in placing his hand upon the exact spot.

If there is anything uncertain in the patient's manner or method, and especially if uneducated, we wish him to describe his sensations with the hand upon the affected part. In many cases we will find that the description commences to wander as soon as the hand is removed. There is a reason for this. With the hand upon the part the mind is directed to it and concentrated, extraneous ideas are rejected, and the description is of actual sensations.

We want to know the character of the pain, its duration, exacerbations and remissions, periods of recurrence, and its influence on function. In this examination the physician should show by his questions and manner that he wants concise and specific answers.

The subject of pain is a study of itself, and much less is known of it than we would wish. In some cases it indicates the special remedy which will cure; in others it simply points to a pathological condition, and remedies must be selected by other symptoms.

Thus if we have a pain in the head, heavy, tense, and the pa-

tient sleepy, we give belladonna; if it is sharp and restless, gelsemium; if sharp, limited in location, despondent, pulsatilla. If of the frontal region and orbits, with burning, rhus; if of the right side, passing from before backwards, bryonia; if of the back of the head, dull and heavy, iron.

The pain in right hypochondrium, pointing to the umbilicus—indeed, all pains pointing at the umbilicus—nux vomica. Pains deep in the ischiatic notches, podophyllin. Pains that are tensive and paroxysmal, macrotys.

The pain of macrotys is a singular one. It feels as if dependent upon tension and is decidedly remittent—a continued succession of tensive pains. We usually prescribe macrotys for muscular pain, no matter what its character, *and hit it* in a large majority of cases. For this remittent tensive pain—waves of pain—no matter where it is, we may prescribe the macrotys with certainty (the pain is not throbbing).

If we take the pain of lobelia, we will find its principal characteristic *anguish,* of which angina pectoris and neuralgia of the heart offer the most common examples. It is that indescribable sensation as if the life was being forcibly riven from the part—anguish expresses it. Lobelia is specific to it. Give twenty to forty drops of a good tincture of the seed to a person suffering from angina, and there is instant relief, which becomes complete in a short time.

In referring to the pain characterized by anguish, Prof. J. M. Scudder said:

"I have seen one case of uterine neuralgia presenting this character, and from which the patient had suffered beyond conception—a single dose of lobelia arrested the paroxysm; and its repetition when the symptoms were felt gave a radical cure. I have seen two cases of abdominal pain presenting this character to some extent, and both were relieved by lobelia. A singular case of hypochondria, in which the feeling as if a movement of the body would endanger life, but without pain, was cured with lobelia.

"The peculiarity of this pain or sensation is so distinct that patients may describe it. For many years (indeed, it was one of the first things I learned in practice) I have given lobelia in certain cases of labor where the pains assumed this character. Every one will have recognized the two classes of pain, one of which is well borne, which is really relieved by the action of the will, and the other which finds no such antagonism. In the latter

class I find the indication for lobelia, and it has proven one of the most efficient agents I have ever used in obstetric practice."

Nux vomica is indicated in any pain having a tendency to point at the umbilicus; it is pretty accurately located. It may be a simple colic, a bilious colic, a derangement of the function of the liver, a wrong of the spleen, a dysmenorrhea, a disease of the colon, irritation of the bladder—if the pain shows the constant tendency to the umbilicus, give nux.

The pain indicating rhus toxicodendron is very distinctive. Frontal pain, especially involving the orbits, and inclined to be more severe on the left side. Such pain should lead us to prescribe rhus, if there are no other indications. To any pain add *burning,* and we would think of rhus as a possible remedy. Given the pains of rheumatism with burning, and rhus is the anti-rheumatic, or is alternated with macrotys. The pain calling for bryonia, whilst it may be sharp or dull, always has with it a sense of oppression, as if the part were enfeebled and could not perform its function. Take a case of pleurisy, or pleuro-pneumonia, or pneumonia, with this sense of oppression and feebleness, as if the part could not and should not do its work, and bryonia, with the proper sedatives, will prove curative. In the same way a rheumatism, giving the same symptoms of inability, with increased pain following the use of the part involved, will be cured by bryonia.

The pain calling for belladonna is dull, heavy, full, with a sense of functional impairment. It makes but little difference where you find it, or in what disease; whether a simple headache, an ague, "bilious fever," or inflammation of the lungs, belladonna will prove curative.

The pain calling for stramonium is constrictive, and when involving muscular structures is attended with persistent contraction, but when of the outlets of the body, it is expulsive. A case of dysentery, with most violent expulsive movement of the pelvic muscles, was speedily relieved with stramonium; as was a case of broncho-pneumonia, showing as a symptom a most marked and unnatural constriction of the chest.

The pain calling for gelsemium has as a marked feature exalted sensibility and arterial throbbing. In some cases, especially in the head, the patient dreads movement, and the pulsa-

tion of the arteries is distinct and painful. With such pain in any part of the body, we would prescribe gelsemium with every assurance of success.

The pain calling for chelidonium is dull, heavy, tensive, with occasional twinges, as if the part were being torn. Situated in the right hypochondrium or epigastrium, chelidonium is *the* "liver medicine."

The pain calling for iodide of ammonium seems to involve a definite amount of tissue, as in inflammation, and yet points at some particular place which might be covered with the tip of the finger.

Uterine pains associated with backache are greatly modified by the use of calcarea phosphorica. The same remedy is of relieving value in the pains which often occur just before the menstrual period.

Bearing-down pains in the hypogastrium, from which many females severely suffer, are promptly lessened by helonias and calcarea fluorica.

In thus calling attention to the symptomatology of certain pains in therapeutics, it should not be understood that it is claimed to be infallible. Our own senses are imperfect, even when trained by long observation. The senses of the patient are untrained and impaired by disease, and his descriptive powers may be very feeble.

The educated sense of touch is a most valuable aid in the diagnosis of many wrongs of life. In the diseases of women it is of the utmost importance. The finger tells the condition of the uterus, not only as regards position, but pathological changes as well. It determines diseases of vagina, bladder, rectum—indeed, of all these parts—and does it so well that it becomes our most reliable guide to treatment. In all forms of uterine disease the abdominal touch affords much valuable information.

The obstetrician relies wholly upon the sense of touch, not only in determining the presentation and position of the child, but the condition of every part engaged in the process. His touch tells him the condition of the depending portion of the uterus as an outlet, and also the condition of the organ as regards the power of expulsion. It determines the condition of the vagina as a parturient canal, and becomes so sensitive that

it recognizes intuitively changes of condition that will render the labor painful, protracted or difficult.

In a case of labor if the examination shows constriction with want of secretion—*pinched* expresses the condition of the parts, both of the lower segment of the uterus, vagina, and perineal tissues—we know we will have a protracted and difficult labor. If the hand is placed upon the abdomen over the uterine globe, and we get the same sensation of unnatural contraction—pinched—there is rigidity of the os or perineum, and the remedy suggested by this condition is gelsemium. If, upon examining muscular tissue, the same unpleasant sensation of contraction and irritability, with pain, is imparted to the touch, aconite and cimicifuga will be the remedial agents needed. If in chronic disease of the pelvic viscera we obtain the same sensation, as the hand rests upon the lower abdomen, gelsemium, aconite and cimicifuga will act in a curative direction.

If on examination during a tedious labor we find the tissues thick and doughy, with the os and adjacent parts rigid, lobelia will promptly modify the patient's sufferings. The touch here tells the story clearly and explicitly, and also names the remedy which we find on trial acts specifically.

The sense of touch constitutes an important means of diagnosis in the lesions of nutrition and excretion—supply and waste. If there is loss of size and weight, we want to know whether this change results from loss of fat or muscle, and for the one we use our sense of touch on the covering of the false ribs, and for the other on the muscles of the arm. It would not do to feed a patient with preparations of beef or other histogenetic material if we needed fat, though we might give calorifacient food to save tissue.

The sense of touch will in many cases tell us of the medicines that will prove curative. If the sensation be of want of tone—tissues loose and flaccid—we think of bitter tonics, quinine, the hypophosphites and iron. If the sensation be of structures pinched and stringy, we look for lesions of the nerve centers, and think of cimicifuga, hydrochloric, lactic and phosphoric acids, fatty inunction, etc.

The sensation of fullness without elasticity would suggest old tissues and the necesssity of active waste. In this case acetate of potassium, iodide of potassium, and stimulant cathartics and

diaphoretics would constltute leading remedies. If digestion remained good, these might be sufficient, for the tissues would be renewed as fast as broken down. But if their use gave soft and flaccid tissue, we should supplement them by such a restorative as the triple phosphate of quinine, strychnine and iron, and remedies of a similar character.

We would never give iodide of potassium in secondary syphilis, where the tissues give the pinched and stringy sensation to the touch. Such a case would ask for veratrum, cod-liver oil, iodide of ammonium, echinacea and arsenic.

The value of the sense of touch as an aid in diagnosis and prognosis in diseases of the nervous system is spoken of by Prof. William B. Pritchard as follows:

"The sense of touch is one of the most valuable and at the same time neglected aids in refined diagnosis. The presence or absence of atrophy, for example, often decides the diagnosis, and, of course, the prognosis and treatment. The eye cannot always be relied upon. In infantile spinal paralysis the loss of power is often widespread at first. It is important to know what degree of residual, permanent paralysis will be present. This is indicated by the atrophy. The contour of the limb in which atrophy exists may not be altered, and this is especially true in fat, chubby children. The sense of touch, if educated by training, will settle the problem much more certainly than the eye. Hemiatrophy of the tongue is often apparent to the sense of touch when the eye discloses nothing. The difference between contracture and contraction, sometimes quite important, is determined by touch. The twitch of chorea, when latent, in cases just developing or on the road to recovery, is at times determinable only through the sense of touch."

Prof. Robert T. Morris, one of the most eminent surgeons of the present day, has the following to say of the value of the sense of touch in the diagnosis and prognosis of appendicitis:

"In any form of appendicitis, palpation is the first and by all means the most important procedure upon which to depend for obtaining testimony. The history of subjective symptoms in any given case may lead one toward other diagnoses, but palpation will give the keystone among the facts elicited in getting the history of a case. The degree of technical skill necessary for accurate palpation of the appendicial region is acquired so readily, that students who at first cannot depend at all upon their sense of touch, and who cannot palpate a kidney or the free border of the liver, are soon enabled to palpate a normal ap-

pendix by giving strict attention to careful attempts at palpation. In acutely progressing cases of infective appendicitis it is often unwise to attempt to palpate the appendix itself, but palpation of the abdominal wall gives sufficient testimony. It is in interval cases, or in cases of appendicular inflammation without infection, that we can examine the appendix most readily with the finger-tips. It is essential to have the appendix against some fixed point, in order to examine it accurately by touch through the abdominal wall, and with this object we carry it against the iliac or psoas muscles whenever possible; even then it is not sufficiently fixed for good palpation unless we steady the cecum by pressing the abdominal contents toward the right iliac region by making firm pressure with one hand upon the left side of the patient's abdomen. It is important also to avoid exciting a reflex contraction of the muscles of the abdominal wall by 'poking' the abdominal wall with the finger-tips. It is best to use three fingers of the right hand, placed rather flatly upon the patient's abdomen, when beginning palpation; or, if that excites contraction of the abdominal muscles, the whole hand or both hands are used for making general pressure at various points on the abdomen for a moment. Palpation with the whole flat hand gives one the best appreciation of the degree of contraction of the abdominal muscles, no matter whether infection of the appendix is present or not. In their first attempts at palpation of the appendix, students are apt to find only the cases in which plastic exudates have made a mass in the appendicial region. Gradually they get to recognize the cases in which there is thickening of the appendix wall alone, and finally they are able to palpate normal appendices, or in many interval cases to state that the appendix is scarred, or contains a concretion, or is variously angulated by adhesions. Many practitioners believe that the normal appendix cannot be palpated, and one needs only to observe their attempts at palpation to realize that they are honest in their conviction. It certainly requires a little special training in order to do the work well.

"The simplest and commonest form of appendicitis is not the result of an infective process, but results from a normal involution of the inner coats, which takes place in almost every individual after middle life, but sometimes beginning as early as the twentieth year. In this normal involution of the appendix, the lymphoid and mucous layers are gradually replaced by connective tissue. Involution commonly begins at the distal extremity of the appendix and causes gradual occlusion of its lumen. The connective tissue which replaces the lymphoid and mucous coats contracts and irritates the terminal filaments of the sensory nerves of the appendix, so that the patient has a feeling of dull pain directly in the appendicial region. This pain may disappear for several days at a time, and yet the patient is conscious

of a certain amount of discomfort in this region most of the time. The contracting connective tissue in the appendix irritates also the sympathetic nerve filaments which are engaged in the scar tissue, and we apparently have a reflex irritation of Auerbach's plexus and Meissner's plexus over a large area of bowel surface, so that intestinal fermentation becomes a prominent feature of the case, and is frequently the only one which receives attention at the hands of the consultant. Palpation in cases of normal involution of the appendix gives us an abdominal wall which is rather more resistant than normal, but not so resistant as in cases with infection. Palpation of the appendix itself gives us a feeling of hardness of the tissues of the appendix in the involved area.

"The symptoms of normal involution of the appendix, aside from those of discomfort in the appendicial region, are chiefly those of intestinal fermentation. The prognosis in these cases is good, so far as the question of danger to life is concerned, but the cases in which the symptoms drag on for years often incapacitate a patient from doing the full amount of physical work for which he is naturally adapted.

"In tuberculosis of the appendix, the symptoms are very much like those of involution of the appendix, with two distinct exceptions; when pressure is made over the appendicular region the patient complains of very much more local tenderness than he does in cases of involution. In tuberculosis the infection is progressive, and soon extends to neighboring structures, while in involution of the appendix the symptoms may be as well marked in the first year of the disturbance as they are five years later.

"Cases of true infective appendicitis are the ones over which the most warfare has been waged during the past fifteen years, and the questions of diagnosis and prognosis have been reduced to the point of scientific accuracy. The symptoms in an acutely progressive case of true infective appendicitis are generally so well defined that it is unusual for good observers to make an error in diagnosis. The point of primary importance is gained by palpation; the rigidity of the muscles of the abdominal wall is such a salient feature that we practically need never expect to find a case in which this symptom is absent. The rigidity of the muscles of the right side of the abdomen is often greater in degree than upon the left side at the outset of an acute attack. Pressure with the fingers over the region of the appendix elicits the fact that we have an unusual degree of tenderness at the site of that organ. It is quite true that the appendix may be abnormally situated, but in practical everyday work we may expect to find it in the right iliac fossa. These two features, rigidity of the abdominal muscles and distinct local tenderness on pressure over the appendicial region, are practically all we need in mak-

ing a diagnosis of acute infective appendicitis when our attention has been directed toward the patient's abdomen by the various symptoms belonging to the acute inflammatory processes of the hollow viscera of the abdomen. One hears a good deal about mistaking inflammation of the ovary or Fallopian tube for appendicitis, but this can rarely occur if one depends upon palpation for making his diagnosis, excepting in cases which do occur of simultaneous involvement of the appendix and uterine adnexa in an acute inflammatory process. We hear of cases of duodenal ulcer, of gall-stones and of nephritic colic having been mistaken for appendicitis, but it is probable that in such instances sufficient attention had not been given to the matter of careful palpation of the appendicial region."

When directed by a properly trained brain, the finger which possesses a refined sense of touch can obtain from the pulse information of inestimable value concerning the most important function of life. Healthy life is dependent upon a regular and uniform circulation of blood, and disease must follow any considerable or continued variation in this function.

In describing the pulse, Prof. Huxley, in his "Physiology and Hygiene," said:

"If the finger be placed upon an artery, such as that at the wrist, what is termed the *pulse* will be felt; that is to say, the elastic artery dilates somewhat, at regular intervals, which answer to the beating of the heart. The pulse which is felt by the finger, however, does not correspond precisely with the beat of the heart, but takes place a little after it, and the interval is longer the greater the distance of the artery from the heart. The beat of the artery on the inner side of the ankle, for example, is a little later than the beat of the artery in the temple.

"The reason of this is that the sense of touch by finger is only delicate enough to distinguish the dilatation of the artery by the wave of blood, which is driven along it by the elastic reaction of the aorta, and is not competent to perceive the first shock caused by the systole. But, if, instead of the fingers, sufficiently delicate levers were made to rest upon any two arteries, it would be found that the pulse really begins at the same time in both, the shock of the systole making itself felt all over the vascular system at once; and that it is only the actual dilatation of the arterial walls, which, traveling in the form of a wave from the larger to the smaller arteries, takes longer to reach and distend the more distant branch."

Whilst the heart is the center and principal source of power of the circulation, every vessel does its part in aid of the move-

ment of the blood. We have, therefore, to determine by the pulse the condition of the heart, the condition of the arteries, the condition of the capillaries, and to some extent the condition of the veins. As these movements are stimulated and co-ordinated by the sympathetic nervous system, it should also tell us of wrongs of innervation. As the movement of the blood depends, to a certain extent, upon its organization and condition, it may also determine for us something of the wrongs of this fluid.

We will probably study the pulse to better advantage if we anaylze it and think of its elements separately. Put your finger on the radial artery and carefully observe the movement. It first divides itself into: (*a*) a dilatation of the artery, and (*b*) a succeeding contraction. The wave of blood forced forward by contraction of the ventricles gives us the arterial dilatation, whilst the contraction of the artery may represent the subsequent filling of the ventricles from the auricles.

To this extent the pulse evidences the time of contraction, or the rapidity of the heart-beat. Even to this extent the information is important, for a healthy life can only be maintained when the movement of the blood is well timed. If the heart beats too rapidly, we must have a wrong in the life, as if it beats too slowly we will have a wrong in the life.

With regard to *frequency of pulse,* we are in the habit of saying: As is the frequency so is the impairment of all the vegetative functions—of the appetite, digestion, blood-making, nutrition, excretion from skin, kidneys and bowels, wrongs of the blood, the activity of zymotic poisons, etc. There may be exceptions to this general rule, but it is so constant that we find it important to act upon it in every case of disease. Given frequency of pulse, the questions at once suggested are: What is its cause? What is the remedy?

Whilst frequency of pulse suggests to us the use of that class of remedies called sedative (special or arterial sedatives), they will not always answer our purpose. If the wrong be purely one of the circulatory apparatus, functional in its character, and depending upon a wrong of sympathetic innervation, these remedies will probably be sufficient. But if the frequency of the pulse represents and is dependent upon some other lesion, as of the blood, or local disease, then other and different remedies may prove the sedatives.

Frequency of pulse is associated with frequent respiration. The proportion is usually four beats of the pulse to one respiration. The relation of frequent respiration to various wrongs of function will be known to the reader, and evidently a slower respiration is something to be desired in all cases of disease, and something that must be obtained in some cases if the patient recovers health.

Without reference to the undue general excitation that comes from frequent respiration, and the exhaustion that must follow this severe muscular work, attention should be called to the marked wrong it must work in diseases of the respiratory apparatus. Rest is an essential to recovery in all diseases of excitation, and in most diseases of structure. With a rapid pulse we cannot have rest of the respiratory apparatus, for the movement of the chest is related to the movement of the blood. Make the pulse go slow, and the movement of the chest is likely to be slow in proportion.

The relation between the frequency of pulse and the temperature will be borne in mind. For each increase of ten beats per minute of pulse there is an increase of one degree in the temperature. Thus with a normal circulation of 72 beats per minute, and a normal temperature of 98°, we will find an increase of pulse to 90 will give a temperature of about 100°; with an increase of pulse to 120 we will have a temperature of 103°, and so on. This rule does not hold good in all cases, possibly not in the majority, for the high range of temperature from 103° to 108° does not carry the pulse up proportionately.

When we come to consider the influence of changes of temperature we find them similar to those that follow change in the time of pulsation. In the ratio of increased temperature we find arrest of excretion, of nutrition, of digestion, of blood-making, and of innervation, and that zymotic poisons propagate themselves more rapidly. With the temperature maintained above 100° F., death is a matter of time; indeed, molecular death is going on from the time the temperature strikes this point.

It was mentioned that local processes of disease are severe in proportion to the frequency of the pulse. This will be noticed especially in inflammation; as is the frequency of the pulse so is the intensity of the inflammation, the impairment of the life

of the part, and the danger of a termination in death. The local hyperemia is increased by the rapid pulse, and the final arrest of circulation is also promoted by it. If, therefore, we wish to stop the process of inflammation, we select those remedies which will lessen the frequency of the pulse.

If in any case we have a structural lesion, whatever may be its nature—either an impairment of nutrition or from deposit—we will find, frequently, that its progress will be in proportion to the rapidity of the pulse. In these cases remedies that influence the circulation, giving it normal frequency and freedom, will be very important.

It was also stated that zymosis or sepsis was rapid in proportion to the frequency of the pulse. This may be noticed in those diseases known as *typhoid*, in erysipelas, the eruptive fevers, diphtheria, as well as in typhoid and typhus fever. As is the frequency of the pulse so is the evidence of sepsis, as marked by dirty, brown or black coatings on the tongue, sordes on the teeth, *pungent* heat, offensive discharges, etc. The danger to life is frequently in proportion to the frequency of the pulse, and means that will give a better circulation as regards time, freedom and uniformity in all parts of the body, lessen these unpleasant symptoms.

But frequency is only one of the wrongs of the circulation, and but a part of the information we should obtain from the pulse. Frequency has reference to the rapidity of the blood-waves—the number that passes under our finger in one minute. In addition to this we have to notice that there are peculiarities in the blood-wave, and in the current after this wave has passed. The pulse has volume—referring to the size of the artery. It has varying impulses in the wave of the blood, and also in the interval between the waves.

Volume, or increased size of the artery, may have reference to the amount of blood, to its increased circulation, or to some obstruction to its free movement. We will have a large pulse in the plethoric, we may expect a small one in the anemic, and these conditions will be determined by other evidences. If the artery is large, and the person is not plethoric, we ask the question: Is it dependent upon a more rapid movement of the mass of the blood, especially to the surface, or is it dependent upon an obstruction to its movement through the capillaries?

Freedom in the pulse-wave indicates the one, and a want of freedom—oppression—indicates the other condition.

The *sharp* impulse of the wave of blood, as it strikes the finger, may be referred to lesions of the nerve centers, espe- for remedies that relieve it. If the impulse be sharp, the wave short, and the inter-current vibratile, the irritation is extreme.

short, and the inter-current vibratile, the irritation is extreme.

The dull, elastic stroke of the wave refers us to an impairment of innervation from the sympathetic and spinal cord. The more marked this is, the greater the necessity for those remedies which stimulate and give strength to these nerve centers.

The length of blood-wave has reference to that condition known as "sthenia," an excitation founded on strong life. This is especially the case where the wave is large in volume and well supported by the column of blood behind.

The *oppressed* pulse is marked by a want of power in the stroke, and more especially by a feeling as if the current in advance of the wave broke its force. Evidently the blood-wave does not measure the amount of blood passing through the artery. It refers us to obstruction in the capillary vessels, or possibly an impairment of the large vessels as well, or a wrong in the blood unfitting it for circulation.

If the finger be carefully trained it will notice a variation in the surface of the wave, as well as in its length. Many times it is distinctly felt as two waves—a first, sudden and short, and a second, full, even and prolonged. The first may be called the *shock*-wave, and the second the systolic-wave, which represents the movement of blood from the heart.

The *shock-wave,* sharp and pronounced, may always be referred to undue excitation of the nerves distributed upon the vessels, and an undue contraction or tension of their walls.

The full, strong, systolic wave may be referred to excitation of the heart and strength in its movement.

The short systolic wave evidences a want of cardiac power, and especially of impaired innervation from the spinal cord and sympathetic.

The inter-wave current sometimes gives valuable information, and it is well for the reader to observe it carefully in health and learn its normal condition. We find in disease that it has

more or less volume, has more or less strength, and has more or less of the vibratile quality.

When we speak of a *full* pulse, we have reference to the inter-wave current as well as to the wave, and the condition of sthenia will be determined by this. It is a strong life in a state of excitation.

If now we add *hardness,* we have added an especial lesion of innervation, of excitation steadily maintained.

If we speak of a *small* pulse *hard,* we refer it to impairment of life from activity, still maintained.

If we have a *small* pulse *soft* and easily compressed, we refer it to deficient innervation.

If we have a *small* pulse *vibratile,* we say it is the expression of impaired life, with great excitation of the nerve centers.

If we have an *empty* pulse, the inter-wave current hardly perceptible, it is evidence of impaired life, with enfeebled innervation from the sympathetic.

To the educated touch the pulse gives most valuable information with regard to the most important functions of life. Many physicians can locate lesions with great certainty from it alone; they can distinguish lesions of the brain, lungs, digestive apparatus, urinary apparatus, etc., and determine to some extent their character.

But in the practice of medicine there is something of more importance than locating a disease, or even determining the character of a lesion. The important object is to associate the evidences of disease with remedies for their cure, and to make the expressions of disease point to the medicine.

Feeling the pulse gives us a knowledge of the lesions of the circulation—most important information in the majority of diseases. Every lesion of the circulation is distinctly announced to the cultivated touch, as are some lesions of the blood and of the nervous system. In so far as we here study the pulse, it is intended that it shall mean special remedies—not names of disease.

Frequency calls attention to a wrong of the circulation, and prompts the asking of the question, why? It does not necessarily mean veratrum, aconite, gelsemium, etc., though it is suggestive of them. Why? Is the wrong in the vessels an obstruction to the free circulation of blood, requiring an increased movement

of the heart to compensate it? Is the wrong an enfeeblement of the heart, requiring increased frequency of impulse to compensate for want of power? Is the increased frequency dependent upon irritation of the cardiac plexus? Is the frequency dependent upon a wrong of the blood? Upon a cerebro-spinal wrong?

The *full* pulse with *strength* means medicine—veratrum. Whether full and hard, full and bounding, the special sedative named is at once suggested. It may not be all that the patient needs, but it is one thing, and in many cases will stand first.

The *full* pulse *doughy* (lacks the marked vibration) means lobelia; or if marked and associated with fullness of mucous membranes and purplish discoloration, baptisia; or if accompanied with muscular pain, apocynum.

The *full* pulse *open* is kindly influenced by podophyllin, and especially by quinine in full doses.

The *large* pulse *empty* calls for the alkaline sulphites, sulphurous acid, stimulant baths or fatty inunction, quinine and histogenetic food. The sensation we get in this case is of an artery of large caliber, but with too little volume of blood, the sensation after impulse being of emptiness.

The *full pulse* vibratile calls for gelsemium, usually associated with veratrum.

The *full pulse* oppressed calls for belladonna, alternated with veratrum; if sepsis, baptisia or echinacea, as indicated by the other symptoms.

The *small* pulse usually means aconite or ferrum phos.

The *small* pulse *vibratile,* aconite and gelsemium.

The *small* pulse *oppressed,* belladonna and aconite.

The *small,* soft, easily compressed pulse, aconite and stimulants. Small doses of quinine with cratægus and food.

The *small* pulse, *frequent,* easily compressed, the wave of blood giving a sensation of *squareness* as it passes under the finger, opium and cratægus.

Want of power in the impulse suggests digitalis and capsicum.

The *sharp* stroke of the pulse, with *tremulous* wave between strokes, means rhus.

The *sharp* stroke of pulse, with even, small, vibratile current between strokes—bryonia.

The *full* stroke, with tremulous or vibratile wave—phytolacca.

The *open, tremulous* pulse—arsenicum.

The *small* or *open* pulse, in which the wave of blood drops suddenly as it passes the finger—pulsatilla or cactus.

Irregularity of pulse, soft or open, with a distinct wrong in the stroke—cactus.

The steady, vibratile pulse, without marked wave—macrotys.

We have often reason to believe that quinine is indicated by the periodicity of the disease, and yet our experience with the remedy raises doubts of whether it will be well received and exert a kindly and curative action. If the pulse is *hard* and *vibratile,* wiry, we will *not* give it; if it is soft and open we may expect its kindly action. The physician who would administer opium or its salts with a hard, wiry pulse, would be doing his patient a great wrong. Here, also, we want a soft, open pulse for the kindly action of the medicine. No one in his senses would give podophyllin when there was a small, wiry pulse, or when it had a sharp stroke. The patient might get through safely, and it might kill him.

If the reader will notice carefully, he will see a marked resemblance between the touch of the pulse and the general sense of touch when the hand is applied to the skin. The sensation from the slight edema of cellular tissue that indicates apocynum, and the pulse that says apocynum, is wonderfully similar. The sensation from the skin that says lobelia and the pulse that says lobelia is the same. The pulse of veratrum is associated with the skin of veratrum. And so we will find it all the way through, if we see the indications for remedies rightly they never conflict.

In an article on the character of the pulse and the information which can be obtained from a well-directed examination of the pulse, Prof. J. M. Fothergill says:

"The character of the pulse is the first thing to be observed. Whether it is full and incompressible, or feeble and obliterated by the pressure of the finger. When the arteries are full of blood the artery is not to be obliterated by moderate pressure during the diastole; that is, in the interval between the beats. A full pulse, then, means high blood-pressure in the arteries, *i.e.,* the arteries are full. When, on the other hand, the pulse is feeble, then there is a comparatively empty artery, and the blood is mainly in the veins. A full pulse is a slow pulse, broadly speaking. A slack pulse is usually a fast pulse. The rapidity of the heart-

stroke is regulated by the condition of the arterioles. The arterioles are almost entirely muscular as regards their walls, and their caliber is regulated by the vaso-motor nerves. When the arterioles are dilated, the blood runs freely out of the arteries, and therefore the artery is slack and compressible, and the heart beats rapidly. Such is the condition of the vascular system in fevers. In sthenic inflammations, *i.e.*, in inflammatory conditions in robust persons, the pulse is full, rapid and bounding. Especially is this the case in acute thoracic inflammations, as pleurisy and pneumonina. In the latter disease, however, if both lungs become extensively implicated, the pulse will become small, weak, and often irregular, because the blood cannot pass freely through the lungs. When the pulse fails in pneumonia, and at the same time the heart is found beating violently, it indicates commencing failure in the right ventricle. A bounding, full pulse is the characteristic of acute inflammation of the thoracic viscera and of the meninges of the brain. But in abdominal inflammation the artery is contracted, feels like a pulsating wire, and is incompressible. Why there should be this marked difference is not very clear: but it exists. In peritonitis; the inflammation affecting the tunica vaginalis, there is this contracted, incompressible artery. It is of the utmost importance to be able to correctly estimate the pulse. Careful examination of the pulse will often tell the form of heart disease under which the patient suffers. The 'splashing,' 'collapsing' pulse of aortic regurgitation is quite characteristic. Irregularity of the heart's action is found in conditions of cardiac dilatation and in mitral disease, and especially when the two are combined. Intermittency in the pulse is of three kinds. (1) A simple halt or pause in the regular beat; often a mere nervous trick, and nothing more, especially in young persons. It is, however, often found with evidences of degenerative changes in persons advanced in years. Its significance depends upon its surroundings. (2) A halt, preceded by a few rapid, feeble strokes, aggravated by effort. Here there is a dilated heart, with or without mitral disease. It is very significant; and it is very important to distinguish this form from the preceding one. Much misery has been caused unnecessarily by attributing to the first form the significance which attaches to the second form. (3) This is where the contraction of the left ventricle is so feeble that the impulse of the blood-wave driven into the aorta fails to reach the radial artery. The intermission may be isolated or in clusters; but if the ear be placed over the heart, its action will be found to be comparatively regular and rhythmic. Sometimes not half the ventricular contractions reach the radial artery. In cases of pulmonary embarrassment the pulse may be irregular and intermittent as a consequence of partial failure in the right heart. The amount of blood passing through the pulmonary circulation is insufficient to furnish a fair blood-wave into

the aorta on the contraction of the left ventricle. The left ventricle can only pass onward what blood comes to it, and no more. This form of intermittency is best seen when a patient is sinking from some disease of the respiratory organs. While the pulse flutters and intermits, and the flame of life is flickering out, the heart, and especially the right ventricle, will be heard laboring away at its ineffectual task. Disparity between the volume of the pulse and the energy of the cardiac contractions indicates enlargement of the right ventricle, except in cases of aortic stenosis.

"Both radial pulses should invariably be felt. Sometimes there is an abnormal distribution of the radial artery, and it courses over the dorsal surface of the hand to the phalanges of the index finger. If it were made a regular practice to feel both pulses, this could not, as it sometimes does, lead to confusion.

"I am not here going to describe the relations of the vagus nerve to the heart. It is enough for the present purpose to say that it contains various nerve-fibrils, some of which accelerate the heart's action, while others slow it. These are called respectively the accelerator and the inhibitory fibers of the vagus. When the blood supply to the roots of the vagus nerve in the medulla oblongata is insufficient, the accelerator fibers are thrown into action, and the heart beats rapidly, so as to pump more blood from the veins into the arteries. When, on the other hand, the roots are flooded with blood from well-filled arteries, then the inhibitory fibres are thrown into action, and the heart's action held back. By this slowing of the heart's action, the blood has time to escape out of the arteries through the contracted arterioles before the next ventricleful of blood is thrown into the arteries. If it were not for this last arrangement, rupture of the arteries, especially the cerebral arteries, would be much more common. Enough has been said in regard to the fibers of the vagus to show how the fast and slow pulse are brought about. It is very important that this broad division be clearly comprehended in daily practice, as it not only helps to clear up the diagnosis, but gives direction to the therapeutic measures. The slow, incompressible pulse indicates a totally different condition from the fast, small, compressible pulse. The latter may indicate debility or exhaustion, or it may be strictly nervous. When a patient is first seen, the pulse is apt to be very much accelerated, especially if the patient be nervous or excited. It is well, then, to feel the pulse at the end of the examination as well as at the commencement; the information furnished by the second examination of the pulse will often correct any erroneous impression produced by the first feeling of the pulse. In many diseases the pulse mounts as death approaches; and when in severe disease the pulse becomes irregular as well as fast, the

condition is fraught with imminent danger. It may become merely a 'wobbling thread,' indeed; or at other times it is a 'fluttering' rather than a rhythmic beat. In conditions of great debility, especially when brought on by hemorrhage, the pulse may become weak or irregular or intermittent, without much real danger. The examination of the pulse ought, then, to indicate careful investigation as to the associated general condition, and will often put the practitioner on his guard in insidious states. A persistingly rapid pulse of 100 per minute is regarded by many practitioners as a certain prodromic indication of commencing phthisis. It certainly is a symptom of evil omen, especially when found with actual lung mischief.

"One thing there is about the rapidity of the pulse which ought to be brought more conspicuously before the student than is done at present, and that is, *the proportion between the rate of the pulse and the respiration.* Normally the proportion is as four to one. If we regard normal respiration as 18 per minute, we get a pulse rate of 72 per minute. This is the proportion in health. In febrile and inflammatory diseases both mount, and we may have the respirations 30 per minute and the pulse at 120. Here the disturbances are such as to affect the respiration and the circulation alike. But when the proportion is disturbed it is most significant. If the pulse be rapid while the respiration is calm, it is well to examine the heart to see if there be any dilatation about it. Dilatation and debility in the heart will send up the pulse, without the respiration being necessarily affected. On the other hand, where there is thoracic embarrassment, the ratio of the respirations mounts up out of normal proportion to the pulse rate. This disturbance of the proportion will not tell what is the nature of the disturbing agent, of course, but it tells in distinct language that some abnormal factor is at work. The cause may be emphysema, with or without some bronchitis; or a large portion of one or both lungs may be consolidated either in pneumonia or pulmonary phthisis, or there may be progressing congestion in acute disease. The student in the hospital ward is always taught carefully to examine the patient's posterior thoracic regions when congestion is suspected, but this is not always convenient in private practice. A private patient has his or her own opinion and feeling which must be consulted, and cannot safely be ignored by the practitioner; and an examination of the back is disagreeably troublesome, and often repugnant to the feelings. It should not, therefore, be done without good and valid reasons. If the practitioner were accustomed to take the rate of the respiration as systematically as that of the pulse, which certainly ought to be the case, a disturbance in the proportion would at once strike him, and put him on his guard. When the respirations commence to mount without a corresponding rise in the pulse rate, then the lungs

should be carefully examined to ascertain the cause of the disproportion. So long as the normal proportion is maintained, the mind may be pretty easy as to congestion of the lungs. The correct timing of the respiration and the circulation is a most important matter, especially in thoracic disease. This matter should have more attention paid to it in the future than has been accorded to it in the past.

"There are nervous conditions which should be considered when both pulse and respiration mount up, and even the temperature may go up, too. Some physicians speak of being fooled by the temperature; but if one carefully examines his patient he is not likely to be led astray by the temperature.

"In pyrexia both pulse and respiration are accelerated, as well as the temperature raised. A fall in any of these is of good omen, as improvement in the other two follows. The pulse may be abnormally slow, either as mere idiosyncrasy, or in cerebral mischief, or in fatty degeneration of the heart.

"Then, again, the character of the wall of the artery is worth noting. Atheroma is a growth of connective tissue in the arterial wall; either found in patches, and especially on points of flexion, as at the knee and axilla, or at the outer curve of the aortic arch; or a more general distribution, where the arteries feel more like tendons than normal blood-vessels. This condition is usually, if not always, due to sustained high arterial tension. In time the artery feels to the touch elongated as well as broadened at each beat. This atheromatous change proceeds in two directions. (1) Towards fatty degeneration, and (2) calcareous change. The first is most common in the atheromatous patch, where the neoplasm softens and is washed away piece-meal in the blood-current, leaving an ulcer which is apt to become an aneurism. The latter change is more general, and in very marked cases the arteries feel as rigid as pipe stems. The atheromatous artery is a very important matter, from its associations with an hypertrophied left ventricle, contracted kidneys, and a waste-laden condition of the blood. Even when the left ventricle begins to fail, the atheromatous artery gives the impression of a good pulse—it exaggerates the pulse-wave so as often to be very deceptive. The condition present may be one of temporary asthenia, and yet an atheromatous radial artery may create the impression that lowering measures are indicated.

"It has been said before that it should be the rule to feel both radial arteries simultaneously. By so doing, many an aneurism of the aortic arch would be detected which escapes observation.

"After pyrexia, inflammatory or other, a fall in the pulse-rate marks the defervescence of the malady. In feeling the pulse, it is well to let the ring and little finger tips trail over the palm. When this is wet and cold, it indicates expansion, not infrequently associated with disturbance in the reproductive organs.

In hectic fever the hand is often very hot. In wasting disease the hand feels lifeless and limp. The hand often tells much as to the mental attitude, the amount of will power, or want of it, in the patient. When presented in order that the pulse may be felt, it is well to feel the hand first, as a preliminary to feeling the pulse."

Among the evidences of disease none are more definite and important than changes in the temperature. Heat is not only force in the animal body, but it is also a condition of life; a man has activity through it, and he has life by it.

The human body maintains its healthy functions at a temperature varying from 98° to 98.6° F. This is a condition *absolute* for health. If the temperature varies to any great extent from this, above or below, disease must result. We may state the proposition in a different form: No disease can exist without changing the temperature of the body, either raising it, depressing it, or rendering it unequal. Thus, change of temperature becomes an absolute evidence of disease, though it may not point out the character or the location of the lesion.

The clinical thermometer is highly valued, because we appreciate the fact that the vital processes can only be performed in perfection in the normal temperature of 98°, and that just in proportion as it varies from this, either above or below, they are changed or arrested. Indeed, it would seem that heat at this degree was the most essential condition of life, and that, if there be a variation from it, those means which will restore the thermal equilibrium are the most direct and important.

The standard temperature of the healthy body is 98.6°, and is subject to a slight variation during the day of about 0.820°. The maximum temperature is in the early morning; it fluctuates and gradually decreases during the day, and is lowest at midnight.

It has been shown that the amount of animal heat may be considerably altered by a number of collateral circumstances. But the great distinction between these alterations of temperature in health and those which are the result of disease is, that these variations are generally temporary, and within narrow limits—amounting to mere fractions of a degree—rarely more than 1.8° Fahr. to 3.6° Fahr., whereas those which are due to disease are persistent so long as the disease exists.

In speaking of the normal heat of the human body, Dr. Aitken said:

"The following are the collateral circumstances which mainly influence animal heat in our daily life, and which require to be remembered in order that erroneous conclusions may not be drawn: (1) *Active exercise,* not carried to the extent of exhausting fatigue, raises the temperature proportionately to the degree of muscular exertion made. (2) *Exposure to cold,* without exercise, lowers the temperature. (3) Sustained mental exertion reduces temperature about half a degree. (4) The amount of heat is also reduced by a *full meal* and the use of alcohol, but it rises again as digestion advances. (5) There are diurnal fluctuations capable of being thus determined. (6) The temperature of the body rises with the temperature of the air; and sudden transition from a cold to a hot climate induces a feverish state marked by increase of temperature on bodily exertion. (7) The average temperature within the *tropics* is nearly 1° Fahr. higher than in temperate regions. (8) The temperature is more readily and rapidly affected—more sensitive, so to speak—than either the pulse or the respiration; and this is especially the case in disease."

We have to study both an *increase* and a *decrease* in the temperature of the body, the first being of most common occurrence and having the greatest range. Thus, whilst a decrease of but one degree, if maintained for a considerable time, will result in death, an increase of two to four degrees may be maintained for a month with safety to life.

The increase of temperature is usually proportionate to the frequency of the pulse. In some adult males of good development an increase of one degree of temperature would correspond to an increase of ten beats of the pulse per minute. In the average adult, however, with a normal temperature of 98°, the pulse would be 70 or 80, and the increased frequency to each degree would be six or eight, until the 103° was passed.

In chronic disease we also find an increase of temperature, and the thermometer becomes almost as certain a means of diagnosis and prognosis as in febrile and inflammatory affections. Thus, for instance, in phthisis pulmonalis we find a permanent increase of temperature to 99° and 100° in the first stages, increasing to 101° and 102° as the disease progresses. This increase is so uniform that it will furnish the best evidence of the nature of the disease in its earliest stage. The frequency of the pulse corresponds to the increase of temperature. Breaking down of the tubercles is announced by a marked increase of

temperature, corresponding to the destruction of lung tissue and the danger to life.

In acute fevers and inflammations we find the temperature increasing in the ratio of the severity of the disease. It does not, however, remain uniformly the same throughout the twenty-four hours, but presents a marked morning decline and evening elevation. This is very distinct, even in continued fevers, which we are accustomed to think of as being uniform in all their phenomena. This fluctuation is rarely less than one degree, and is frequently two degrees or more.

The value of the thermometer as a means of diagnosis is thus estimated by Dr. Aitken:

"In the course of many diseases whose diagnosis has been accurately determined, if the temperature departs from its normal typical range, the thermometer will furnish the best and the earliest indication of any untoward event, such as the additional development of disease, or other visceral complications, in its course.

"When once the typical range of temperature (*normal,* as it were, of the particular disease) is determined, a basis is laid for appreciating irregularities or complications in its course in particular cases. For example, a patient exhibits symptoms of fever of the typhoid type, but during the progress of the first week his temperature becomes normal, for however short a space of time—the occurrence of this event proves that the fever is not what it was supposed to be. Again, a patient may suffer from all the general symptoms of incipient pneumonia; but there is still a doubt as to whether infarction of the lung has taken place. The sputa being suppressed, or not procurable, does not assist the diagnosis. If, however, the temperature is found to be normal, it is certain that no croupous exudation has taken place in the lung, and that there is no pneumonia. Again, if a tuberculous patient has a sudden attack of hemoptysis, and if the temperature of his body is normal during and subsequent to the attack, no reactive pneumonia, nor any exacerbation of the tuberculous exudation, need be expected.

"Again, in all cases of convalescence, so long as the defervescence proceeds regularly, as measured by the temperature, no relapses need be feared; on the other hand, delayed defervescence in pneumonia, the persistence of a high evening temperature in typhus or typhoid fever, or the exanthemata, and the incomplete attainment of normal temperature in convalescence, are signs of great significance. They indicate incomplete recovery, supervention of other diseases, unfavorable changes in the products of disease, or the continuance of other sources of dis-

turbance requiring to be carefully examined into. The onset of even a slight elevation of temperature during convalescence is a warning to exercise careful watching over the patient, and especially for the maintenance of a due control over his diet and actions."

As has been stated, there is a constant relation between the frequency of the pulse and the temperature; that with a range of temperature of 103° to 105° we find a pulse ranging from 110-115 to 130-140. It is evident, therefore, that if we have any means that will control the circulation—lessening the frequency of the pulse—it will also lower the temperature.

The question then arises, if a treatment will thus control the pulse and temperature, may it not change a severe and dangerous case into a mild one without danger? We answer this question in the affirmative, not as a theory, but from observations on many cases of disease.

It should be distinctly understood that this statement refers only to those influences which can be continued for some days, and not to those which endure but a few hours. The use of large doses of veratrum will bring down the pulse from 120 to 60 or 70 beats per minute, in six to ten hours, and with a corresponding reduction in temperature; but it is not possible to continue this influence, as in a few hours the stomach becomes irritable and rejects it, or the depression of the sympathetic nervous system is such as to imperil life.

But if the indicated medicine be given in small and frequently repeated doses, sedation is slowly produced, the stomach receives it kindly, and, instead of depression of the vegetative functions, the remedy acts as a stimulant to them.

It is conceded by many physicians that it is possible to arrest a fever before it has run its course. Not that every case can be shortened, for in some the local lesion of Peyer's glands proves an insurmountable obstacle; but many can be arrested from the seventh to the ninth day, more by the fourteenth, and in nearly all the disease can be restricted to twenty-one days.

A fever terminates naturally by a decrease in the frequency of the pulse, a diminution of the temperature, and the re-establishment of the secretions, by which the cause of the disease is removed. If, then, by the use of sedatives, we lessen the frequency of the pulse, and obtain an equal and uniform circula-

tion, with a corresponding decline in temperature, we find it easy to establish secretion from the skin, kidneys and bowels by the usual means. And in a majority of cases these processes may be sustained by the use of nutritious food and the use of small doses of the bitter tonics.

The temperature has the same relation to chronic disease, and the treatment influencing the temperature will have a like influence. As an example we may adduce phthisis pulmonalis, one of the most intractable diseases we have to contend with. In this, so long as the temperature is maintained, the disease progresses; and very frequently its rapidity is in exact ratio to this. Diminish the temperature, and the disease progresses more slowly. Reduce it to 98.6°, and maintain it at this, and the patient rapidly improves.

The wrong of temperature is but the expression of disease. If the disease is favorably influenced by remedies, the temperature falls or rises towards the normal standard. Thus, in a given case of disease we may see the pathological wrong, whether in the blood, the nervous system, or of waste and excretion, and at the same time the indications for the remedy which will right the lesion, and we know that its use will reduce the temperature. Thus, in a case of zymotic fever the evidences of sepsis are marked, and with sepsis there must be an exalted temperature. If now we select the right antiseptic, say sulphite of sodium, chlorate of potassium, echinacea or baptisia, the temperature will fall with its use. If in any given case we have a special indication for nitric acid, for podophyllin, quinine, etc., they will influence the temperature toward the normal standard.

But in many cases the wrong of temperature may be regarded rather as a cause than as a result. If the temperature is above the normal standard the functions of life are impaired in the ratio of the excess. Thus, as we have already seen, increase of temperature is associated with acceleration of the pulse; increase of temperature is associated with frequent respiration. With an increase of temperature there is an arrest of digestion, blood-making, nutrition, waste, retrograde metamorphosis, and secretion from skin, kidneys and bowels. We also find that structural lesions are influenced in the same manner. Inflammation is active in proportion to increased temperature, as is also the tendency to suppuration and death of the part. The influence

of zymotic causes of disease is also increased in the ratio of increase of temperature, and the condition known as typhoid is marked in proportion to it. In surgical disease we find the processes of repair arrested when the thermometer marks 103°; above this the pus loses its laudable character, becomes thin, ichorous, etc., and presently the structures soften and break down.

The fact that increase of temperature is a condition in many chronic diseases has already been noticed. In phthisis pulmonalis the first advent of the disease is announced by a temperature of 100°. In morbus coxarius, white swelling, etc., increase of temperature is one of the most pronounced and distinctive symptoms. In all these cases we may say that the rapidity of disease is in the ratio of increased temperature, and so long as the temperature is thus high no amendment need be expected. If the temperature can be reduced and maintained at or near the normal standard, the destructive processes are less active, and a cure rendered possible.

If we decide that a wrong of temperature is a cause rather than a result, even though but in part, we wish to know the means by which it may be rectified. The first proposition—"as is the pulse so is the temperature"—gives us the use of the very important class of remedies — the special sedatives in small doses. If these remedies exert a direct influence in giving a slower and better circulation, they will also lessen the temperature. Certain remedies especially influence the temperature through the nervous system, as rhus, gelsemium, bryonia, belladonna, nux, nitric acid, etc. Others influence it through the constitution of the blood, as alkalies, acids, food, etc.

Then, again, we look to the skin as the regulator of heat in the body. It is possible that a wrong in the condition of this apparatus is the cause, in whole or in part, of this lesion. What is the condition of the skin? Is it dry, constricted, full, relaxed? What remedies, in the form of baths or otherwise, will right these wrongs?

If we take the simple lesion of excess of temperature and frequency of pulse, as seen in febricula, we will usually find a cure in small doses of ferrum phos. and kali mur. In many cases with a dry and constricted skin, the sponge baths are found

to place the organism in better condition and lessen the temperature.

If a bath is medicated, we select it as we would the internal remedy. If an alkali is indicated internally by pallid mucous membranes, it will be found best for a bath. If an acid is indicated by deep coloration of mucous membranes, we employ an acid bath. If the skin is relaxed and enfeebled, we think of stimulant, tonic or astringent baths. We employ fatty inunctions in two conditions—when the skin is dry and constricted, and when it is relaxed and enfeebled. In both the inunction answers a good purpose. In some cases we combine with it a stimulant or one of the essential oils; in others we make it a vehicle for the topical application of quinine.

If the increase of temperature is associated with waste of tissue, we find it important to provide a better fuel for burning, and thus allay the excitation caused by destruction of tissue. Thus, in chronic disease we think of olive or cod oil, and foods that contain calorifacient material in excess and that are at the same time easily digested. In acute disease we furnish similar kinds of food, whilst at the same time we modify the process of combustion as much as possible.

In depression of temperature we find every function of life impaired, but in this case the lesion is always of depression, whilst in the preceding it was most frequently of excitation. It requires but a slight fall of temperature to impair and finally arrest functional activity.

In some cases of chronic disease we find a slight depression of temperature as a part of the lesion. At once we ask the question, what is the cause? Is it dependent upon want of food, or of proper food? A wrong of digestion? An impairment of the respiratory function and of combustion? Or a wrong of the skin, so that it permits a rapid escape of heat? On the answer obtained to these questions will depend the treatment.

If it is a want of food, or of calorifacient food, a right treatment will look to the selection of appropriate kinds. If we find a lesion of digestion, either buccal, stomachic, or intestinal, means to rectify these lesions will be demanded. If it arises from deficient respiration, we will direct such exercise as will call into activity the respiratory function and facilitate combustion. It is possible there may be a defect in certain materials

that favor combustion. In some cases there is a want of phosphorus, and its administration will at once restore the calorific function. In others it may be of sulphur, or of sodium, or in some cases it would be met by cod oil. Wrongs of the skin, permitting the escape of heat, are readily recognized by the touch, as evidences of relaxation, of exudation of water from the blood, or hyper-activity of the sudoriferous glands. The remedies will consist of stimulant and tonic baths, or sometimes the use of fatty inunction with stimulants or with quinine.

An irregular or unequal distribution of heat is a source of trouble, as well as its increase or diminution. If we have too much heat in one place and too little in another, we will find associate wrongs of circulation and innervation, and there will be impairment of digestion, blood-making, nutrition, waste, retrograde metamorphosis and excretion. Wrongs of the blood are likewise increased, and there is the tendency to deposits of imperfectly formed albuminoid material. Local diseases are also more severe, and the tendency to structural changes more marked.

In chronic disease we will frequently find that no improvement takes place until the wrong of temperature is rectified. Getting well may hinge on getting the feet warm. With cold feet, remedies which seem adapted to the case continually fail; warm the feet, even by sprinkling a minute quantity of capsicum in the stockings, and the patient improves at once. In some of these cases topical means will be all-sufficient, but in others we will have to employ such as give strength to the circulation and improve innervation.

In acute disease unequal temperature is one of the most unpleasant symptoms met with, and it is always looked for in the advanced stages of severe disease.

If one applies the hand upon a surface from which a sinapism has been recently removed, a peculiar sense of "pungency" is experienced. Quite as distinct a sensation comes in severe scarlet fever, in malignant rubeola, and in diseases characterized by the symptoms known as typhoid. We get a similar pungent heat when there is great excitation of the sympathetic and spinal nervous systems. We may say, then, that this character —pungent heat—which is so readily recognized by most persons, refers us to lesions of the blood—sepsis, and to lesions of the nerve centers—excitation. We at once think of antiseptics as

appropriate remedies, and select the particular one indicated by the symptoms. In so far as the nervous lesion is concerned, we will be guided in the selection of remedies by the facial expression and by the pulse.

It is possible many times to determine the character of a local lesion by the sensation given the hand. Thus, one very readily recognizes the peculiar pungent heat of erysipelas, and sometimes the touch will determine the advent of this lesion in surgical disease before the eye would recognize the change of color or the intumescence of tissue. The hand placed upon the abdomen will feel the advent of puerperal inflammation before it will be recognized by ordinary symptoms. There is very much to be learned in this regard, and it is well to give it thought and experiment.

In one of his lectures Prof. J. M. Fothergill, in part, speaks as follows of the importance of a close observation of the temperature of the human body in disease:

"The temperature may be below normal in cases of collapse, in deep alcoholism, or in embarrassment of the respiration. In disease of the respiratory organs a fall in the temperature is often a most grave matter; indeed, there are times when a high temperature is a matter of much comfort, and a sudden fall of the temperature undesirable.

"The clinical thermometer is one of our most valuable means of examining our patients. It is not however, every practitioner who wields a clinical thermometer skilfully, any more than a stethoscope. It is easy to put either to the patient's body—true; but, after all, the instrument is valueless or valuable according to the brain that superintends the operation. The most delicate or requisite instrument cannot illuminate a defective or imperfectly educated mind. 'After all, it is not the instrument that knows!' Some men act as if they thought that if they only could secure a perfect instrument, it would do away with the necessity for knowledge, and abolish the need of thought. It would do all for them. This is so obviously absurd that it would seem a superfluity to allude to it; if it were not so prevalent it would be quite unnecessary to refer to it.

"In order to wield the clinical thermometer intelligently, and to comprehend the information afforded by it, the student must fully realize the fact that a high body-temperature may be produced by (1) imperfect heat loss; or, (2) increased heat production; or, (3) both combined.

"For successful treatment it is of the highest importance to determine how the pyrexia is brought about. When the skin is

dry, and still more when it is burning as well, then there is defective heat loss *par excellence,* whether there be any increase of heat production therewith or not. In rising fever there is no perspiration. Heat is radiated away from the body by the vascularity of the cutaneous area, and still more by the cooling effect of the evaporation of the water of the perspiration. Sustained effort leads to sweating. In effort more body-heat is produced than in quiet; and this increase in heat production is followed by an increase in the perspiration, with resultant increased heat loss. Thus temperature equilibrium is maintained. In rising fever all perspiration is arrested, and the exhalation of heat from the burning skin is insufficient to keep down the temperature. Consequently high temperatures with a dry skin are not so serious as equal temperatures with a wet or moist skin.

"When the skin is wet, showing great heat loss, a high temperature indicates greatly increased heat production. Here, in spite of an abnormally great heat loss, the body temperature keeps high. In taking the temperature the condition of the skin should be carefully noted. When wet, the rise over the normal temperature is of much greater gravity than where there is a dry skin. This fact should never be overlooked.

"In many cases there is a certain amount of increased heat production, as in local inflammation, with a certain diminution in the heat loss from inactivity in the sweat glands.

"A rapid rise of temperature is more common with children than adults. The younger the organism the more unstable and mobile are its heart-regulating processes. A rise of two or three degrees Fahrenheit in a child is of little moment, but in a person over sixty it should be thoughtfully regarded. A rapid rise to 103° or 104°, or more, in a child often indicates acute indigestion. The more rapid the rise the less serious its indication. Fevers of an important nature usually rise slowly, and often take days to reach a temperature attained in dyspepsia in as many hours. The term hyperpyrexia (that is, a temperature above 105°) is applied to conditions where an abnormally high temperature suddenly increases. It is always a serious affair.

"When the temperature reaches 107° the patient's life is in great danger; at 108° it is in extreme danger; at 110° the prospects of life are nearly blotted out. A very few cases of survival after a temperature of 110° are on record.

"So long as the morning temperature keeps near the normal, a rise of a few degrees in the evening does not alarm one. But when the morning temperature mounts and approaches the evening temperature, the prognosis waxes gloomier. On the other hand, when the morning temperature drops, and there is a distinct gap between it and the evening temperature, then the outlook is brightening. Often a rise or fall in the temperature heralds a coming change, of which it may be the first outward sign.

On the other hand, the student must know that at times rapid rises of temperature are nervous in origin—are, in fact, 'true neuroses.' In one case which came under my notice, in a very nervous girl, for months the temperature, when taken, was over 103°. This rise was accompanied by increased rapidity in the respiration and the pulse. Yet she was sinking of inanition, and never approached the typhoid condition which is many times the consequence of a sustained high temperature, nor gave any indication of persisting fever. Once the temperature, when taken, was 104°, yet she was not at all 'feverish'; it was just excitement, and too evanescent to produce any distinct consequences."

In advising young doctors to examine their cases with care, and to never overlook unusual causes of high temperature, Dr. Austin Flint says:

"The physician is liable to be misled by placing too much reliance on the laws of temperature. They are not infrequently interfered with by complications and accidental events. As an illustration, a young girl had passed through typhoid fever, convalescence being declared, in connection with other symptoms, by the laws of thermometry belonging to the decline of fever or defervescence in this disease. Suddenly hysterical symptoms were manifested, and the temperature rose to 105°. The physician, a man of learning and large experience, was naturally alarmed. In a few hours, however, the temperature declined, and recovery took place without further impediment.

"With regard to the information furnished by the thermometer, as well as other diagnostic symptoms, it is to be borne in mind that there are exceptions to rules which are generally applicable. It is in the female sex that these neurosal disturbances are usually manifested. At the catamenial week of the menstrual cycle, temperature perturbations are common, and a pyrexia, for which there is no apparent cause, may at these times cause unnecessary alarm."

A sustained high temperature ever causes anxiety, as it melts down the body tissues and endangers life from the accumulation of the products of nitrogenized waste in the blood.

CHAPTER IX.

DIAGNOSIS BY THE SENSE OF SMELL.

THE sense of smell possessed by some men is very acute, and is sufficiently developed by most men to give it more or less diagnostic value. A little time and thought, however, given to the

cultivation of this sense will markedly develop its power of differentiating odors, and thus enable the physician to readily determine the probable influence of their causes upon the human body. But whether we can distinguish one bad smell from another or not, we know one thing, that they demand cleanliness, good ventilation, and a restorative treatment. Going one step further, they evidence the condition of sepsis or zymosis, and demand that we select the proper antiseptic. If we can select it from the odor, good; if not, and in any case, we have other expressions of disease that will point out the particular remedy required.

If we apply the sense of smell to the excreta, we find it of some value, though possibly not of very much. The cutaneous excretion gives a distinct odor, and in disease we sometimes find marked changes in this. It is not difficult to recognize the pleasant odor from the healthy skin, kept clean, as it is not to recognize the odor of the person kept dirty. In treating children the evidence of our nose is frequently opposed to the evidence of our eyes. The child seems clean, but the unpleasant odors tell you to look beneath the surface, and it is dirty. We find all manner of odors from the person, running the range of "from grave to gay," and they tell the story of disease and vitiated secretion. Some of these are so characteristic that they cannot be mistaken, as, for instance, the peculiar urinous smell in tinea capitis.

The urine has a distinct odor, that may be called healthy. It may lose odor, or it may have a wide range of morbid smells, each of which should have a distinct significance.

The seminal odor is so distinctive that it can hardly be mistaken, and, as it is very persistent, and may pervade the entire person, it will sometimes give important information. So, too, is the odor from the sexual organs of both male and female, in certain cases of disease.

The fetor of the feces is peculiarly unpleasant, yet the odors are distinctive, and would suggest health in one case and disease in another.

There is a sweetish, mawkish, unpleasant odor, similar to that exhaled from smallpox, which demands the use of sulphurous acid as plainly as it can be expressed in words. It may be sprinkled on the floors, and the chamber utensils may be

washed with it. This not only gets rid of a bad odor, but it removes a cause of disease.

There is a peculiar odor of putrescence which suggests the use of chlorine, phenol or iodine. We use a solution of phenol as a wash for things that are soiled, or as an application to wounds, and a change soon takes place. There is a bad odor that simulates the offensive sputa of chronic bronchitis and some cases of phthisis, which indicates iodine, and we use it as a disinfectant, a dressing, a local application, or as an inhalation. So, too, there is an unpleasant odor peculiar to phlegmonous erysipelas, that calls for permanganate of potassium so plainly that no one need mistake the remedy. A sweetish or mawkish odor from the breath is an indication for sulphurous acid or sulphite of sodium. An odor resembling an offensive lochial discharge is an excellent evidence of the need of chlorate of potassium. The hot breath, with an unpleasant pungence, as of ammonia, calls for muriatic acid. The fetor resembling that from cynanche maligna suggests the use of baptisia.

In the exanthemata a certain animal odor, often amounting to a positive stench, is emitted. Certain lunatics, and markedly paralytics, possess a very disagreeable odor, so strong at times as to have a diagnostic value. In pyemia the breath carries with it a characteristic smell, often described as that of hay or earth. In gangrene of the lungs, and in ozena, the breath is very offensive. In stomatitis the breath is very unpleasant, and in some fevers there is a mouse-like odor. Many persons have an offensive breath when the bowels are neglected, and also when suffering from indigestion.

CHAPTER X.

SECRETION IN DIAGNOSIS.

IT may be well, before considering secretion as a factor in diagnosis, to refresh the memory in regard to the processes by which secretion is brought about and maintained.

Saliva.

In the absence of an inciting cause, very little saliva is secreted, only sufficient being poured into the mouth to keep the surface moist. When, however, food is placed in the mouth,

and the process of mastication begins, the secretion goes on more or less rapidly, according to the stimulating or non-stimulating character of the food being masticated.

The activity of the salivary gland is brought about by means of special nervous agencies when a stimulus is applied to the mouth. The nervous mechanism which controls secretion is what is known as a reflex act. The stimulus, traveling from the surface of the mouth to the nerve centers, is reflected thence to the glands. The nerves controlling this reflex act are spoken of as afferent nerves, which carry the impulses toward the centers, and efferent nerves, which carry them from the centers.

If we remember the circumstances which commonly give rise to a flow of saliva, we shall have no difficulty in determining the nerves which act as the afferent channels in this simple reflex action.

Stimulation of the mucous membranes of the tongue and mouth, whether chemically, as with irritating substances, or mechanically, as by the motions of chewing, is generally transmitted to the center by the sensory branches of the fifth cranial nerve, which supply the mouth, and by the glosso-pharyngeal.

The stimulus of the sense of taste is sent by the nerves of that sense, mainly the glosso-pharyngeal, to the taste center in the cortex cerebri, and from thence to the secreting center by means of intercentral fibers.

The stimulating of the olfactory region with certain odors induces salivation through a channel of a similar kind passing along the olfactory nerve to the brain, and thence to the special emotion, may be excited by seeing or thinking of food, and may cause activity of the salivary glands. Here the intercentral channel is the only one occupied in carrying the impulse to the special secreting center.

Irritation of the gastric mucous membrane stimulates the salivary glands, as may be seen by the sudden flow of saliva which commonly precedes vomiting. In this case the impulses are carried by the gastric branches of the vagus.

Many drugs, when introduced into the blood, cause a flow of saliva. Among these pilocarpine and physostigma are perhaps the most prominent, while atropine and some others, on the other hand, check the action of the glands. From this fact we learn that the nerve center controlling the activity of the salivary

glands may receive impulses from many distant and diverse nervous sources, or may be influenced directly by the quantity of the blood flowing through the special nerve center itself.

The channels traversed by the efferent impulses going to the salivary glands have been demonstrated by experiment. In the case of the submaxillary, the route is especially distinct and instructive, so that from this gland we obtain most of our knowledge concerning the direct influence of nerve impulses on the gland cells.

There are two sets of nerves going to the salivary glands, one belonging to the sympathetic and the other to the cerebro-spinal system, both of which have been proved to exert a certain amount of influence on the action of the glands, the share taken by each apparently differing in different animals.

The sympathetic branches for the submaxillary and sublingual glands come from the plexus which embraces the facial artery, those for the parotid come from the plexus surrounding the internal maxillary as that artery traverses the gland. Both of these nervous plexuses are derived from the superior cervical part of the sympathetic nerve.

The cerebro-spinal fibers for the submaxillary and sublingual glands lie in the complex nerve known as the chorda tympani, which comes from the portio dura of the seventh and joins the lingual branch of the fifth. They pass thence through the submaxillary ganglion to the glands.

The cerebro-spinal parotid branches pass through the lesser superficial petrosal nerve from the tympanic plexus to the otic ganglion, and thence to the auriculo-temporal nerve, which sends twigs to the gland.

In concluding this brief account of the processes by which saliva is secreted, it may be said that the center for the salivary secretion, which at ordinary times is moderately active, may be excited to energetic action by impulses coming from taste, smell and common sensory nerve terminals (particularly in the mouth), as well as by impulses which emanate from mental emotions.

Gastric Juice.

When the stomach is empty the secretion of the gastric juice is not large in quantity, but when the mucous membrane of the stomach is irritated with some chemical or mechanical stimulus,

this secretion becomes quite profuse. The swallowing of alkaline saliva acts as a gentle stimulus, and causes secretion.

In the opinion of eminent physiologists, the secretion of gastric juice is under the control of a special nerve mechanism, and the way in which the state of activity follows stimulation of the part points to its being a simple reflex act.

In considering the chief elements of gastric digestion, it should be remembered that while the food is yet in the mouth the secretion of gastric juice begins, and is greatly increased by the arrival of a bolus of food and a quantity of frothy alkaline saliva. As the stomach is filled, more and more secretion is produced, and as some food is absorbed an additional stimulus is applied. Being kept in motion in a large quantity of liquid, which dissolves the cases in which the food particles are contained, the bolus of food soon falls apart, and each of its ingredients is fully exposed to the action of the gastric juice. The acid reaction of the gastric fluid neutralizes the alkalinity of the saliva, so that the action of the ptyalin is hindered, and the starch granules float about quite unaffected by the pepsin or hydrochloric acid. The heat of the stomach (about 100° F.) melts the fats, and the motion breaks up the oily fluid into smaller masses. They are then mingled with the general fluid, which becomes more and more turbid, owing to the admixture of starch granules, fat globules, dissolved parapeptones and minute particles of partially digested proteids. This dull-gray, turbid fluid is called *chyme*. The proteids (which class of foodstuffs is most profoundly affected by the gastric digestion) are changed more or less rapidly, according as their particles are small and uncovered, or large and massed together, so that they are more or less readily reached by the gastric juice, and also in proportion to the facility with which they form acid albumin. The chyme contains but little peptone; so physiologists conclude that, when formed, it is rapidly absorbed, as are also the soluble sugar and ordinary fluids taken with the food. The chyme begins to leave the pylorus soon after gastric digestion has begun, some passing into the duodenum in about half an hour. The materials which resist the gastric secretion, or are affected very slowly by it, are retained many hours in the stomach, and the pylorus may refuse exit to such materials for an indefinite time, so that, after causing much uneasiness, they are finally removed by vomiting.

However, many solid masses, unchanged vegetables, etc., escape through the pylorus when it opens to let out the chyme.

Bile.

The natural color of bile is of a deep orange-red, but by decomposition of its coloring matter it turns to a greenish-brown. It is transparent and more or less viscid, according to the length of time it has remained in the gall-bladder.

The secretion of the liver varies less in the quantity found in a given time than that of the other digestive glands. After food is taken there is a sudden rise, then a gradual fall, followed by a second rise in the amount produced. The secretion of bile is practically continuous. At the end of a period of fasting the gall-bladder is greatly distended, for the reason that secretion has continued to flow into the receptacle while there has been no call for its discharge into the duodenum.

The secretion of bile is considerably influenced by the amount of blood flowing through the organ. The variations in the rate of secretion may depend on direct nervous influence, as claimed by many physiologists, but no special secretory mechanism has been discovered for the liver.

Pancreatic Juice.

The duodenum as a digestive cavity in importance is second only to the stomach, for into it is poured the copious secretion of the pancreas and the liver.

The pancreas does not continue in a state of activity during the intervals between the periods of digestion. The secretion commences immediately after taking food, and rises rapidly for about two hours, then falls and rises again in the later hours of digestion, five to seven hours after a meal; then it gradually falls for eight to ten hours, and ceases completely when digestion is at an end. The first rise, which accompanies the introduction of food into the stomach, according to learned physiologists, is brought about by nervous agencies of a similar nature to that of the stomach, the secretion of which follows closely upon mastication. The second accompanies the passage of undigested food through the intestines, and may also be most conveniently explained as the result of reflex nervous stimulation of the gland cells.

The most important function of the pancreatic juice is the formation of peptone from proteids, which operation is carried out by a special ferment called *trypsin*. It has been found by investigators that this ferment can only be obtained from the active pancreas.

The pancreatic juice is, of all the digestive fluids, the most general solvent. It acts upon the three great classes of food-stuffs which require modification to enable them to pass through the barrier that intervenes between the intestinal cavity and the blood current. It changes proteids into peptones, it greatly modifies fatty substances, and converts starch into soluble sugar.

Intestinal Juice.

Very little is known of the nervous mechanism or the local cell changes which accompany the formation of the intestinal juice (by which is meant the fluid poured out by the innumerable short tubes or follicles of Lieberkuhn), but eminent physiologists believe that the secretion is under the control of some nerve center which can call the entire tract into action when one part is stimulated.

The observations as to the digestive properties of this secretion are very discordant, and outside of the lines of this work.

Mucus.

Glands which are saccules lined with refracting cells, and known as mucous glands, are the chief source of the thick, tenacious, clear, alkaline and tasteless fluid called mucus. These glands are distributed over all mucous membranes. This secretion contains about 5 per cent. of solid matters, of which the chief is *mucin,* the characteristic material of mucus.

Lachrymal Fluid.

The lachrymal glands secrete a thin, clear, colorless, alkaline fluid to moisten the conjunctiva. This fluid commonly passes from the eye into the nasal cavity, and supplies the inspired air with moisture.

The secretion is produced continuously in small amounts, but is subject to such considerable and sudden increase, that at times it cannot all escape by the nasal duct, but is accumulated in the eyes, until it overflows to the cheeks as tears. The secretion of the gland is under nervous control, the impulses stimulating the

secretion starting either from the periphery, and passing along the sensory branches of the fifth or along the optic nerve, or from the emotional centers in the brain, and arriving at the gland in a reflex manner.

In preparing the foregoing description of the processes by which the various secretions are established and maintained, the substance of material taken from Prof. G. F. Yeo's excellent "Manual of Physiology" has been extensively utilized.

The term excretion is commonly employed to designate a gland fluid the chief constituents of which are manufactured by other tissues, and are of no value in the body, but, on the contrary, require to be continually removed in order that their accumulation in the blood may not give rise to injurious consequences. These effete matters are the result of numerous chemical changes in the tissues, whence they are always collected by the blood and carried to the glands which preside over their elimination.

Secretion—one of the most important functions changed by disease—is a purely vital process performed through certain cells called secretory. In considering secretion in relation to disease, it is well, therefore, to keep continually in mind the fact that in the case of all the secretions there must be a membrane continuously giving birth to secreting cells, and that these grow to the normal stature of cells, withdraw from the current of blood the special material of their secretion, and then discharge themselves with it in the common duct.

Taking one step further, we find that function not only depends upon life, but upon the normal conditions of life. This is true of every part and every function of the body. Studying the life of cells—and secreting cells bear a very close relationship to formative—we find that a certain temperature, circulation and innervation are necessary. Probably the life of the secreting cell is not so much affected by changes of these as the life of the formative cell, but within a certain range it is so dependent; whilst the range is greater, the effect beyond certain points is just the same.

The cause of lesions of secretion may be general or local, and the diagnosis is made by an anaylsis of general symptoms influencing secretion at large, and symptoms pointing to local lesion of the secreting organs. When secretion in general is affected, we

have good reason to think that the lesion is general; when but a single secretion is affected we have good reason to believe that the lesion is of the organ furnishing the secretion.

When all the secretions are involved, the cause, as a rule, will be found in changes of temperature, circulation, innervation, digestion, blood-making and waste. If, now, secretion is to be restored to its normal condition, we want normal temperature, normal circulation, innervation and waste, especially the first three. In a large majority of cases secretion is re-established so soon as the conditions of life permit, without the use of special means to this end. Thus, in acute disease, if means are employed to rectify the wrongs of circulation, the temperature and innervation, we find that the tendency is to a re-establishment of secretion as the conditions of health are approached.

Local lesions of the secretory apparatus are best classified as irritative and atonic, as it points out the classes from which our remedies are to be drawn. When a part is involved there will be, in nearly all cases, such unpleasantness of it as will call the attention of patient and physician to the wrong. It may be pain, or something less pronounced than pain, but it gives the special part a distinctive character separate from the general life. In health the body is a unit, and all sensations are pleasurable; in local diseases there is a feeling of separateness between the part and the life, and the severer the disease, as a rule, the more distinct this feeling which regards the suffering part as distinct from the life —a foreign body, which it would be well to get rid of.

It is true these subjective sensations are not always pronounced, and in some cases the suffering is so manifested that it seems of some other and distant part. Yet if the patient's attention is excited, he readily determines the wrong sensation, and our knowledge of nervous distribution and sympathies will soon translate the character and situation of pain.

Excluding neuralgia, acute sharp pain is the evidence of undue excitation and an active condition; whilst dull pain and sensations of weight and dullness, indicate atony, with impaired circulation and innervation. It may be said that this method of diagnosis is too gross and arbitrary, but in the majority of cases it will serve as a good basis for the selection of remedies.

With this method, we should say the absence of local symptoms points to general disease, and we carefully examine our

patient with reference to the conditions of normal secretion. Finding the wrong in temperature, circulation or innervation, we select from those remedies that influence the particular function, and take that one which in its action is opposed to the disease, and in its influenec brings the functional wrong toward the standard of health. Determining a local wrong, we at once think of those remedies that especially influence the organ or part, and take that one which in its action will do that which favors the healthy life of the part.

Secretion is divided into two classes, recrementitious and excrementitious, and it is well for the reader to have a good knowledge of these distinct from each other, learning the uses of each. We want to know the simple facts with regard to the use of saliva, gastric juice, bile, pancreatic fluid, and the small glandulæ of the intestine in digestion, that we may weigh the wrongs which may arise from changes in these secretions. We want to know the value of mucus as a lubricant and protector of mucous membranes, and of the sebaceous secretions as a lubricant and protector of the skin. And we want to know the value of excretion from the lungs, the kidneys, the skin, and bowels, as a means of removing worn out and effete material from the body. It is direct thought that we want, for when the mind is directed to a single object it readily grasps it, but when it is made to embrace a multitude of objects they become indefinite and indistinct.

If, for example, we are called to a case of increased secretion of saliva, the diagnosis is easily made, for the senses cannot fail to be impressed by the increased amount of fluid in the mouth. But the questions that follow are not so easily answered: Is the increase from local disease of the salivary glands? from disease of parts contiguous? from diseases of the digestive apparatus below? from disease of the brain? or from a lesion of the sympathetic system of nerves? It seems difficult at first to make such diagnosis, and yet as the mind considers one after the other of these, with such light as additional symptoms may throw on it, the problem is soon solved, and in its solution we are directed to the particular class from which the remedy is to be selected, and possibly the special remedy which will cure.

The example given above is one of the most complex, and we will find the others simpler. If we take the secretion of gastric juice, we might make a different study. First, is the disease gen-

eral, local, or sympathetic? If the examination is carefully conducted, the absence of evidence of local disease, and of parts with which the stomach is in special sympathy, and the evidences of general lesions which might affect the stomach, will determine the first classification. But if the local symptoms were pronounced, and there was wanting the evidences of general or sympathetic disease, we would have determined the second classification. Whilst if we had pronounced disease of parts with which the stomach sympathizes, as of the uterus or brain, but without marked symptoms of local or general disease, we would have determined the third classification. It may be that we will find two, or possibly three, of those causes in some cases, but we reach our conclusions by these methods of examination and thought.

If we take the liver as the next example, we will find it necessary to employ a different method. The first questions we ask are with reference to local disease. Has the patient unusual sensations in the right hypochondrium, of pain, weight, distension, pressure upwards on lungs, toward the mesial line on the stomach? Is there tenderness on pressure, sense of fullness when the hand is passed over the part, or can the organ be felt below the margin of the ribs? Is there expression of disease from adjacent parts, as from the bowels, stomach, lungs? Is there a wrong in the uses for which the bile is secreted?

In the present day it requires but little study in order to become convinced of the absurdity of many of the old ideas in regard to the functions of the liver, and to reach the conclusion that the liver does its work very kindly and well, and is an organ that aids nutrition, and not waste. If, therefore, we find a wrong of intestinal digestion in which the liver is very surely concerned, we may look after the condition of this organ.

The secretion is peculiar in color, and sometimes wrongs of the liver may be determined by this. Thus fecal matter is to some extent colored with biliverdin, and if the color is dark, we say excess of bile, if it is light we say deficiency of bile. This method of diagnosis is a little crude, for there are many sources of error. Thus Lehman showed that the peculiar green stools following the administration of calomel were not due to any action of that drug upon the liver, but to the presence of sulphate of mercury in the feces. An excess of acid may also

produce *green stools,* as a deficiency may render them lighter in color.

The cutaneous pigment will provide a better guide than the color of the feces. The yellowness of jaundice will be called to mind as an instance, and many will recollect brownish spots—liver maculæ—that are very clearly traceable to the liver and its associate organs. But a change in the pigment less marked than this has a very definite meaning. It causes a *tawny* coloration of the skin, giving it a dull, dirty appearance. This always points to a wrong of the chylopoietic viscera, especially to innervation from the solar plexus, and indicates the class of remedies that have been regarded as "liver medicines."

But the really important point to determine in these cases is the condition of the organ with regard to excess or defect in its circulation and innervation—is there excitation or atony? The symptoms are usually distinct so far as this is concerned, and the remedies will be clearly pointed out by the symptoms; but in this conditon mistakes are often made. Take, for instance, a case of jaundice, in which the teaching in the past was to give hepatic stimulants, such as podophyllin, leptandrin, blue pill, calomel, etc., without reference to the condition of the liver. But in one-half the cases there are evidences of excitation in pain, tenderness on pressure, and accelerated circulation, increased temperature, dry skin and scanty urine. Surely hepatic stimulants are not remedies here, and they usually do much harm instead of good. In such case the patient requires aconite, veratrum, gelsemium, acetate of potassium, or kali muriate, as indicated by the disease expressions. In some cases fomentations to the right hypochondrium are useful. In the opposite class of cases, with sensations of weight, fullness, oppression, unequal temperature, etc., such drugs as will stimulate the liver and associate organs will prove remedies.

Again, we wish to know in this connection that the bile pigment, when once deposited in the cutaneous tissues, is never removed by way of the liver, but is always excreted in principal part by the kidneys. In so far, then, as getting rid of the unpleasant coloration of skin in jaundice is concerned, we might just as well give a remedy to act upon the salivary glands as the liver. There are scores of these olden-time errors in practice that can only be gotten rid of by a careful study of physiology.

The pancreas does a most important work in secretion, one which the physiologist clearly understands, and yet we hear nothing about "pancreatic complaint," "pancreatic disease," or "touching the pancreas." Indeed, there are no pancreatic remedies in our materia medica. Why is this? There is nothing like getting these substances fairly in view, that we may think of them. Lehman remarks:

"The *function* of the pancreatic fluid in digestion may be twofold, namely, *to change starch into sugar*, and to decompose the fats, so as to render them absorbable. That it actually performs the former in digestion, has been placed beyond doubt by numerous experiments. The pancreatic fluid possesses this property in a much higher degree than the saliva; it is operative at even a low temperature; neither bile, nor gastric juice, nor free acids, interfere with the function of the fluid."

What, then, would be symptoms of disease of the pancreatic secretion? Most surely they would be functional, and we would find them in imperfect digestion of calorifacient foods, a deficient supply of burning material, and a more or less rapid consumption of the fat stowed in the body. We would naturally expect to find unchanged starch and fat globules in the feces, and examination shows that this is the case. Just so soon as we begin to reason rightly, we reach definite results.

But if we have no "pancreatic medicines," how will we rectify these wrongs, after we have found them? This is also easy enough. There are in almost all cases certain lesions of the circulation, temperature, innervation, excretion, etc., which are easily recognized and relieved. When this relief has been secured by the judicious employment of the indicated remedy or remedies, normal secretion will be re-established.

In addition to the bile and pancreatic fluid, we have an intestinal fluid secreted by the "bottle-shaped" glands of the alimentary canal. With regard to this, Lehman remarks:

"The intestinal fluid serves, as regards its function, as a complement to the digestive fluids, which become inoperative toward the middle of the small intestine; it possesses not only, as the latter of these does, the power of rapidly changing starch into grape sugar, but also of dissolving and rendering absorbable flesh and other protein bodies. In tied knuckles of intestine, into which starch or paste has been introduced, all the starch is transformed into sugar at the end of three hours, and in a great meas-

ure absorbed. Pieces of meat or coagulated albumin disappear from such knuckles after six to fourteen hours."

As will be seen by the foregoing, the intestinal fluid is capable of doing almost the entire work of digestion, and it really does do a considerable part of it.

What we want to know, as a basis for a rational prescription in wrongs of the intestinal glands is: Do we want sedation or stimulation? Do we want it of the circulation, or the innervation?—though these are usually associated. It is hardly worth while to point out now the special indications for amygdalus, bismuth, nux, chelidonium, aconite, ipecac, nitric acid, podophyllin, etc., for their uses will be fully given in Part II of this work.

Mucus is secreted to lubricate and protect mucous surfaces, and in normal amount it favors the performance of function. Wrongs of the secretion are usually easily determined. If of the outlets of the body, the condition may be seen and felt. Thus, it is easy to recognize increased secretion from the nose, throat, and genito-urinary passages, from the abundant discharge. Increased secretion from the bronchial mucous membranes is known by its discharge, and also by the blowing and rattling sounds heard during cough and on auscultation. Increased secretion of mucous in the stomach is usually shown by the heavily loaded tongue at its base, whilst increased secretion of mucus in the intestinal canal will be shown by the uniformly dirty tongue and by the tumid abdomen. Scanty secretion gives rise to irritation, and this is one of the prominent signs, and, taken together with the absence of discharge, is very good evidence.

With a wrong of mucous secretion we ask the questions: What are the general wrongs operative in this case? What is the condition of the mucous membrane as regards its circulation and innervation? It is a rule in practice to rectify any general lesions preparatory to the cure of local disease, and many times with this the local disease will disappear. Thus, in a given case of acute disease we have a frequent pulse, high temperature, and excited innervation, with dry mucous membranes; the use of the appropriate general remedies will establish secretion. And on the contrary, if secretion is too free, the use of appropriate general remedies will lessen it.

When we think of local remedies, we want to group (*a*) those which act upon mucous membranes, (*b*) those that act upon the

special organ, part, or function involved. Having the classes of remedies before us, we now select a stimulant sedative, or one which by its action tends to change the character of the secretion or function. It is not difficult to select a local remedy if we know exactly what needs to be done, and we have a clear knowledge of the value of remedies.

A change in the sebaceous secretion frequently gives rise to cutaneous disease. If our attention is directed to the function of this secretion as a lubricant of the skin, its lesions will readily be detected. The treatment here will have reference to the condition of excitation or atony of the circulation and innervation, and to changes in the nutrition of the organ. Sedatives in the one case, stimulants and tonics in another, and remedies that alter morbid action in others, will be selected to meet the different cases.

A wrong in the secretion of tears, or the meibomian secretion, may occasion serious trouble with the eye. Profuse lachrymal secretion is sometimes a source of irritation, always a source of feebleness to the tissues. Scanty secretion, on the contrary, by leaving the eye dry, and without the protection given by this fluid, is a cause of irritation. The secretion of the meibomian glands serves an important purpose, and when in excess or defect, the function of the eye is impaired, and unpleasant disease may be grown.

Just so soon as the mind is directed to the parts which *may* be diseased, it is pretty certain, by direct symptoms or by exclusion, to determine the exact location and kind of disease. Then, knowing the action of remedies, local and general, these may be selected with reasonable certainty.

A wrong in the secretion of cerumen is a very frequent cause of partial deafness and many aural unpleasantnesses. It is surely well to know this, and by a careful examination determine the character of the disease—whether in excess, defect or perversion—and also the condition of the secreting structures as it regards increased excitation or atony. With such knowledge as may be readily obtained by any one the treatment of these diseases becomes successful.

The principal object in the consideration of these secretions is to call attention to the necessity of constantly keeping our physiological knowledge well in hand, and directing at-

tention first to the use, that we may be able to understand the disease.

The *excrementitious* secretions are four in number—from the lungs, the skin, the kidneys, and the bowels—and these remove the waste of the body. The due performance of the function of excretion is essential to health, and in disease we invariably find a lesion of one or more. If the excretions are in excess, debility is the result and becomes a prominent symptom. If they are in defect, materials which should be removed are retained within the body, the result being irritation or oppression, according to the character of the material and the amount retained.

Excretion by the lungs is one of the most important of the excretions, being to the extent of 517 grains of carbonic acid per hour. In a rough estimate the value of these excretions may be written—lungs eight, kidneys two, skin and bowels each one. True, it is carbon which is thus excreted by the lungs, but a simple experiment in closing the mouth and nose of an animal will show that it will kill in a very few moments.

Excretion by the lungs may be in excess, and this will be seen by the vivid redness of the blood where it reaches the surface, by the frequent, full respirations, an exalted circulation, an excited nervous system, a high range of temperature, and rapid waste of tissues. We find these evidences of excess both in acute and chronic disease, and it must be checked by the indicated remedies. Such a remedy as veratrum, and, to a less extent, lycopus, cactus, or sticta, must prove of great value in such cases, associated with such local and topical applications as relieve irritation and give rest. In the early stage of pneumonia with such symptoms, veratrum and a plaster of the compound powder of lobelia applied to the chest, may prove speedily curative, and in some cases of phthisis veratrum becomes a prominent remedy.

Defect in excretion from the lungs will be known by the darker color of the blood where it comes to the surface, the evident defect in the movements of the chest, fullness of superficial veins, and the oppression of all the functions from retention of carbonic acid gas.

At once our attention is directed to such remedies as prove excitant to this function, as nux, if there is deficient spinal innervation, phosphorus, arsenic, lobelia, bryonia, drosera, apocynum, kali phos., etc. If by these means excretion of carbonic

acid can be increased, the various functions of life are relieved from oppression.

Even if this knowledge did not point us to special remedies, it would be valuable as suggesting a proper hygiene. The patient suffering from excess wants quiet and rest, a moist atmosphere, and one not stimulating. The patient suffering from defect requires such exertion as will call into action the respiratory apparatus, a dry atmosphere, and one which is stimulating. Proper direction in these regards may be the one thing necessary to recovery, and we can only give such advice when we thoroughly understand our case.

The attention of physicians has been specially directed to the skin, kidneys and the bowels, as the apparatus of excretion, the importance of this function to health, and as a cause of disease. Careful study of these functions should be made, and their therapeutics improved.

This fact should be especially learned, that in a large majority of cases wrongs of excretion are dependent upon changes in general conditions of life—the circulation, temperature and innervation—and that when these are corrected the excretions resume their normal condition. Even when the function is not restored, very simple means are usually all that is required.

Excess in secretion from the skin is readily determined by its moisture to the touch, dampness of the clothing, as well as by the patient's sensations. The questions that follow are, Is it from excitation, or is it a result of debility? It rarely results from excitation in disease, though once in a while from increased circulation to the skin, as in some cases of rheumatism, and in the so-called sweating fever, and some other anomalous cases, this will be found to be the case. Here the diagnosis is quite clear—the skin has an active circulation, is deepened in color, and the temperature is increased. The increased perspiration of debility is not increased secretion, but an exudation of water, washing away a small quantity of albuminoid materials. The condition is determined by the evident relaxation and loss of tone to the touch, the pallor, and usually the want of sensitiveness.

Evidently the treatment will be different in the two cases. The one of excitation requires the special sedatives, aconite, veratrum, gelsemium, or special remedies influencing the sympathetic nervous system, as the rhus, lycopus, etc. We want to

relieve the undue excitation of the skin, and this accomplished, the sweating ceases. In the other case an opposite treatment is required. Here we select such remedies as stimulate the skin—stimulant diaphoretics—and we are governed in our choice of remedies by the specific indications presented in each case. Or stimulants to the circulation—such as belladonna, bryonia, ipecac, etc.—may be needed. Local means will vary just as much, in the one case being sedative, in the other stimulant.

Defect in secretion may usually be known by examining the skin, which in one class of cases gives the hand a sense of dryness and constriction, and in another dryness with want of elasticity and life. The symptoms produced by retention of this excretion, are first of oppression, terminating in chill, and second of excitation, giving the phenomena of fever. As will be seen, the general symptoms are somewhat indefinite, for both the oppression and stimulation may be the result of other causes. It is well to give due weight to this lesion, though we may not rest our entire practice upon it.

If the defect in secretion is due to an increased circulation and temperature, means to rectify these wrongs will stand first. In a majority of cases of fever and inflammation, a right use of the special sedatives and proper baths will place the skin in such condition that it will resume its function, or that it can be called into action by very simple remedies. In other cases, where the wrong of circulation, temperature and innervation is based upon other special lesions, the use of the *special* remedy for this is followed by a return of normal circulation, temperature and secretion. A marked example of this will have been seen in the administration of tincture of muriate of iron in some cases of erysipelas, as well as in the use of rhus when specially indicated.

If the defect is due to a want of excitation in the cutaneous nerves and circulation, remedies are employed which exert a stimulant influence upon the skin. Many diaphoretics owe their power to influence this secretion to their stimulant influence, and of course they can be beneficial only when a correct diagnosis is made, and they are rightly used.

Perversions of this secretion are not uncommon, but, owing to our imperfect means of diagnosis, are rarely recognized. "This fluid (sweat), as it collects in drops on the skin of one perspiring, is colorless, tastes salty, has a peculiar odor, is poor in solid con-

stituents, and, when recent, always reddens litmus." Yet we find in disease that it has color, sometimes to the extent of coloring the clothing, varying in shade and intensity; has a variety of tastes, sweet, sour, acrid; is rich in albuminoid elements; and is sometimes neutral to test paper, and in other cases will change red litmus blue. Evidently here is a field that will repay investigation. Authorities upon skin diseases have recognized the fact that perversion of the secretion may be a cause of some of these, and may perpetuate the most intractable.

In so far as we know now, treatment will be directed to the physical condition of this organ, as shown by examination, and to lesions of the blood. The last are sometimes very important, for so long as there is in this fluid morbid material that is excreted by the skin, so long will the skin suffer.

Before leaving this subject it may be well to again call attention to the character of normal cutaneous secretion, and to the fact that, in so far as it is a secretion, it is affected by the secreting cells. In its normal state the skin has a uniform temperature slightly below that of the blood, gives to the hand a pleasant sensation of softness and elasticity, is not damp and moist, indeed, rarely shows moisture upon the surface except on increase of temperature and exertion. As this is the condition in which it does the best work, it is the condition we wish to obtain in disease. Many act as if they supposed secretion from the skin necessitated the pouring out of an increased quantity of fluids upon the surface, as from the old class of sudorifics. Yet in practice we find that the soft and but slightly moist skin is the best evidence of secretion.

The urine, as an index of disease, being fully studied in another chapter of this work, it will only be necessary here to notice a few of the more salient features connected with this study of the secretions.

In acute disease, retention of the elements of the urine is so clearly shown by the nervous system that there can hardly be a failure to have our attention directed to them. The first influence is that of *excitation;* the patient becomes restless and irritable and suffers more than the condition of disease will account for. The second influence is that of oppression; the patient becomes dull and lethargic, and finally sinks into coma. Of course, we may have cerebral excitation and coma without any wrong

of the urinary secretion, but we never fail in these cases to make diligent inquiry, and satisfy ourselves as to the source of the nervous lesions.

Now scanty urine has a definite meaning, as has unpleasant sensations in its passage, or a failure to pass it, and in all such cases a critical examination of the urine should be made. In all cases in which disturbances of the nervous system are manifested, such examination is imperatively demanded. This fact cannot be too strongly impressed upon the mind of every physician.

But finding a failure upon the part of the kidneys to do their work, we are not yet ready to say, "Give diuretics." We want to know the condition of the kidneys as regards their circulation and innervation. Such arrest may result from irritation and determination of blood, and any excitant may so increase this as to entirely suppress the secretion and cause death. Or it may result from capillary congestion, which the ordinary diuretics would increase, and thus death might result from the use of remedies which in ordinary cases would increase secretion.

The condition of the kidneys may be determined in part from a personal examination. In irritation with determination of blood (active condition) the patient will have a sense of constriction in the loins, with tensive or drawing pain, sometimes seeming to be in the spine. Sometimes the sense of irritation extends to the bladder, the urethra, the testes, and even to the rectum. In irritation the patient is restless, quick in his movements, the eyes are bright, the tissues around them seeemingly contracted, the tongue small and pointed, and the pulse small, wiry, or vibratile. In congestion the patient complains of a sense of fullness and weight in the loins, and sometimes the same sense of fullness and weight in the pelvis. The patient is dull and apathetic, the eye dull, the face expressionless, the tongue somewhat full, and the pulse lacks sharpness in the wave—oppressed.

Such diagnosis is of especial value, because it enables the practitioner to select his remedies with certainty. If we have the condition of irritation, we give gelsemium, with or without the sedatives, as may be indicated. If there is the condition of congestion, we give belladonna, ergot or solanum, with or without aconite as the sedative. Diuretics are not given until there is marked relief and secretion has become more free;

indeed, sometimes they will not be required at all. When we do give them, they are selected with reference to the condition of the kidneys—sedative diuretics for the condition of irritation, stimulant diuretics for that of congestion.

Excess in this secretion is not of frequent occurrence, and is usually recognized without trouble. The large amount of urine in diabetes, insipidus and mellitus, attracts the patient's attention, and is evidence to the physician of the nature of the wrong. But there are a few other cases in which the excess is not marked in this way, the patient passing but the usual amout of urine, or possibly it is less in volume than usual. It is only when tested with the urinometer that it is found continuously of high specific gravity, and that the solids are increased from one-tenth to possibly one-fourth more, and still it does not contain sugar or albumin. Such excess will be marked by loss of flesh and strength, and by feelings of weight and dragging in loins or pelvis.

The wrong may be wholly due to a lesion of the kidneys, or principally to an excess in retrograde metamorphosis. This, of course, must be determined to give us a rational treatment.

Attention is rarely called to lesions of *perversion* by the common examinations of the urine. Of course, there are exceptional cases, as the excess of urine in diabetes mellitus, and urinary irritation in some cases of deposit, in which the direct symptoms are sufficient to excite attention. In the majority the diagnosis is made by exclusion. There is an impairment of the health; object—to locate and determine the character of the lesion. And thus we give the patient a thorough examination with reference to the more important functions and organs. Is it of the circulation, digestion, respiration, innervation, nutrition, secretion of skin, bowels, *kidneys?* Thus excluding one after the other, as we find them free from disease, we at last reach the affected part. Even now we do not know the character of the lesion, and proceed by the same method to determine it. Is there sugar in the urine, albumin, blood, the phosphates, or some of the rarer morbid materials? The general symptoms may point us to the special examination, or we may be obliged to make test after test, until we determine what the real trouble is.

But having learned the character of the perversion, we are not yet ready for treatment. The examination must go a step further—to what extent is it a lesion of the kidneys, or of some

other part, the blood, nervous system, or the associate secretions from lungs, skin and bowels? And still a step further, we want to know the physical condition of the kidneys and the special character of any other wrong.

The reader may say these methods are very complex, and it will be difficult for one to follow them out. Possibly this may be true, but there are cases that require just such thorough analysis to give them successful treatment.

When we study excretion from the bowels, we want first to correct our physiological ideas of the value of the secretion, and if we consult an eminent physiologist we find that "The contents of the intestines, even after the use of tolerably simple articles of diet, consists of a mixture of undigested, indigestible, and already changed or decomposed substances, with which are mingled constituents, partly undecomposed, partly already metamorphosed, of the digestive fluids." But of a real secretion, eliminated by the glandulæ of the intestine, the feces contain but a small proportion—probably less than the excretion from the skin.

Excess is usually associated with frequent fluid evacuations —diarrhea—yet we must not take it for granted that in all cases of diarrhea there is excess. Excessive discharges of feces produce debility, first, by the removal of some portions of the food, and, secondly, by withdrawing some of the albuminoid materials of the blood.

Constipation is not to be regarded as positive evidence of *defect* in secretion from the bowels, as it is possible, and not uncommon, for constipation to exist for days, and excretion goes on into the bowels as before. But constipation may be a cause of disease, either from irritation produced by the débris of digestion, or by the decomposition of some of the material, or by the generation of offensive gases, or the absorption of some of the decomposed matters. Evidences of irritation or of oppression, when they can be referred directly to inaction of the bowels, may be regarded as an indication for the simpler cathartics. The more harsh remedies of this class have usually been used for their derivative effect, and the saline hydragogue cathartics to deplete the blood-vessels of fluid.

Small doses of mild laxatives do increase the secernent function of the intestine, and at the same time improve its function

of digestion. The dose is less than that required for catharsis, and the indications are sensations of fullness, weight and atony.

Perversions of the secretions of the bowels and accessory glands are recognized principally by changes in color and in odor, but these are not as certain as would be thought at first sight. The reasons are clear—there is so much and varied coloring material taken with the ingesta, and the odor, naturally intense and foul, is so readily changed by decomposition of fecal material. Still, it is well to make the feces yield all the information possible.

A few examples may be given in illustration. The vivid green discharges of childhood, acrid and irritating, give information of excess of acid, and suggest the use of alkalies. The extreme yellow (chrome) of infantile discharges evidence an insufficient digestion of the food, both of albuminoid material and fat, and suggest more care in diet, and the use of remedies that give tone to the digestive apparatus. The *clay-colored* evacuations of disease tell of want of secretion from all the intestinal glands, liver included, of impaired power of digestion, and suggest the use of stimulants to the upper intestinal canal and associate viscera. The yellow *rye-mush* feces of typhoid fever are characteristic, and call our attention to commencing disease of Peyer's glands. The deep brown or black feces, with greenish tinge, sometimes yeasty, is one of the most marked indications of the *typhoid* condition, and calls attention to the necessity of antiseptics. The color and physical properties of mucus, pus and blood, are readily recognized, and either by their quantity, condition, or some local symptoms, their source may be readily detected.

CHAPTER XI.

THE BLOOD AND ITS CIRCULATION IN DIAGNOSIS.

The study of the blood is one of much interest to the physician, for in changes of its structure and circulation we find a principal element in many diseases. The old Hebrew poet well remarked that "the blood is the life of man"; at least we find by experience that wrongs of the blood are manifested by impairment of the life. We study both the lesions of the blood and the

lesions of its circulation, and it is well to keep them separate in the mind.

Excess in the amount of blood is of very rare occurrence as a cause of disease, and yet occasionally we meet with cases in which, from local disease, the high stimulus of a large amount of rich blood is injurious. We find such cases in local disease of the kidneys, the lungs, the heart, the brain, in which these organs, enfeebled by disease, cannot bear the strain of such vigorous life. This has been named sthenic plethora. There is another condition in which a large amount of blood is continuously made, but, owing to exhaustion of the circulatory apparatus and nervous system by excesses, its circulation is sluggish.

Excess of blood is readily recognized by the fullness of the blood-vessels, especially of the capillary system of the surface, which shows the deep tint of abundant red globules by the full, firm tissues and the vigorous performance of function. Asthenic plethora will be recognized by fullness of blood-vessels, oppression in the stroke of the pulse, and a turgid venous circulation, giving the surface the peculiar color of venous blood. The color is so characteristic that, when associated with the full animalized tissues and the full blood-vessels, there can be no mistake in the diagnosis.

When high stimulus is likely to be a source of danger, we take measures to lessen the quantity of the blood. The safest means is to diminish the supply of food to a minimum, and select such vegetables and fruits as yield small proportions of nitrogenized material. In some cases the saline purgatives and diuretics may be employed to a limited extent with advantage, which, with well-regulated exercise, will remove the source of danger. Many a man has lost his life because his digestive and blood-making organs were so much better than the remainder of his body that they have furnished the material for a too active life. In asthenic plethora the important remedy is *right* living. Cut off the supply of stimulant drinks and food, establish good excretion, and have the patient take such exercise as will promote a more rapid combustion and waste of effete material, and in a few months the patient will be on safe ground.

Defect in the quantity of the blood—*anemia*—is readily recognized by the want of color of surface, and the loss of that hardness and elasticity of tissue that we call *tone*, and a loss of

size and functional activity of the soft structures of the body. "As the life of a man is his blood," we have a loss of life in proportion to the condition of anemia.

But we may have gone so far in our diagnosis as to determine absolutely that there is a want of blood, and yet not be ready to make a prescription. We want to know why a sufficient amount of blood is not made, or why, if made, it is not applied to the proper use—nutrition. In one case it will be a want of proper food, or of some special element of the blood, in another a want of buccal, gastric or intestinal digestion, in another a wrong in the blood-making organs, in another a lesion of the circulation, in another a lesion of innervation, in another a lesion of retrograde metamorphosis or excretion. Is it too much to ask that each of these receive due consideration, and that our prescription should be directed to the special fault? It requires a little time to pass all this in review, but the mind works very rapidly, and, taught to work right, it will do all of this automatically.

Of course, the treatment of anemia must vary in different cases, as the cause of it varies so much. In one case good food, well prepared, is all-sufficient; in another some special element of blood needs to be added; in another the digestive apparatus requires stimulation; in another special stimulants are required to increase sympathetic innervation; in another special means to give a right circulation and temperature; in another stimulants to the formative cells by remedies and exercise; and in others still the cure comes from stimulating the processes of waste and excretion, thus getting rid of old and feeble forms.

The consideration of *spanemia,* or poor blood, is hardly necessary here, because it is included in the general term anemia. Whilst it is possible to have a normal amount of blood, yet poor in some of its elements, this is a rather rare condition. It will be known by the full, limp, inactive tissues, the full, blue veins, the full pulse without power in its stroke, and the tendency to dropsical effusions. It is really a worse condition than a simple anemia, and requires more care in its treatment. As we employ means to increase the formation of blood, and add those elements necessary to its proper structure, we at the same time wish to get rid of the old stock, and the safest way to do this

is by well-regulated exercise and gentle stimulation of the apparatus of excretion.

Special consideration is always given to a want of some of the elements of blood, and to the means which will restore them. This is the basis of the treatment called *restorative*. If the blood requires phosphorus, it will not do to give it iron, as when it requires iron it will not do to give it sulphur or a bitter. The special symptoms heretofore named, showing these defects, should be closely studied.

But the blood may be *bad*, or changes may be going on which will work its destruction. This fact can be recognized in the ordinary way, by an inspection of it where it shows at the surface, by any material (secretion) that is drawn from it, and by wrongs in the nutritive function which is based upon it. When you think of these methods for a moment you will see that they have a physiological basis, are plain, and eminently practical.

In acute disease we are more interested in those changes going on in the blood which we call septic, than in any special material contained within it, and these changes are more readily recognized by exudations than other means. Attention has already been called to the secretions and deposits upon the tongue, as evidencing the condition of the blood. We find that all exudations that might be called *dirty*, and all changes in color toward brown and black, might be regarded as certain evidence of sepsis, and of the impairment of the blood. In so far as the term *typhoid* is applicable to sepsis, these symptoms are among the most prominent in typhoid diseases.

Any exudation will serve to show the character of the blood as well as the coating upon the tongue. The discharges from the bowels and of urine, the sputa in disease of the respiratory apparatus, the lochia in puerperal disease, the "washings-of-meat" discharges in dysentery, the secretions of an ulcer, the sanies of an injury or surgical operation, all tell the story explicitly. It is not possible to get a good secretion or exudation from septic blood, and the character of the one will show the condition of the other.

In some forms of chronic disease there is effete or imperfectly elaborated albuminoid material in the blood in considerable quantity. It serves to lower the character of this fluid, and to impair

all vital activities, and, by influencing the nutrition of structures, it gives rise to local disease.

The evidence of *bad* blood is best found in wrongs of excretion and of nutrition. There cannot be a wrong of this character without an effort on the part of the skin, kidneys and bowels to remove the unpleasant material, and we will usually find that all three of these emunctories show a lesion caused by the effort, though one may suffer more than another. In the case of the skin it manifests itself in cutaneous disease, taking the forms of the exanthemata in the simpler cases, and the graver forms of the pustulæ, squamæ and tuberculæ, when the lesion is more persistent and severe. This fact has long been recognized, in so far as the treatment of skin diseases has embraced means for removing effete and unpleasant materials from the blood.

In a large number of cases, a treatment that looks to the increase of excretion, and better digestion and blood-making, removes all the unpleasantness. In the remaining cases some special material of the blood is wanting, frequently lime, sometimes sodium, potassium, phosphorus, etc.

In some cases the urinary apparatus is the special seat of suffering. The entire apparatus is irritable, and the urine contains an abundance of ammoniacal compounds, and gives characteristic deposits. The effort at removal may be continued by these organs until severe disease is induced, as seen in some cases of chronic inflammation and an occasional case of degeneration. The bowels always suffer more or less. Indeed, it is hardly possible that this condition should continue long without a loss of regularity in defecation and a change in the character of stools.

The lesions of nutrition may take the form of degeneration or of deposits. In the one case we have the symptoms of enfeebled function, and a want of expression in the soft tissues. In the other comes the evidence of local disease, enlargement preceding inflammatory action, which runs a very irregular course. Whenever swelling and change in the form and functions of a part precede inflammatory action, there is a wrong of the blood, and means must be employed to remove the unpleasant material by excretion, and to provide for better blood-making.

The process of cure here is clearly indicated. The *bad* material is to be removed, and *good* material is to be introduced in its place. We wish to know whether it is necessary to employ

means to stimulate retrograde metamorphosis, by exercise or medicines, to increase the processes of combustion, to employ remedies that modify and arrest the septic processes, or to use such as increase excretion. It is possible that the habits and surroundings of the patient must be changed before a cure is effected, or that he should have better food, better digestion, or better blood-making. In thus getting a better blood, there is less tendency to depravation.

Among the most common lesions in disease are wrongs of the circulation of the blood. We may state it as an axiom that the condition of health requires a circulation normal in time and character, and just in proportion as we have a change from this normal standard we have severity of disease. The time of the pulse varies greatly in different individuals in a state of health, in the adult having a range of from sixty to eighty beats per minute, yet in its other characteristics it is pretty uniform, and can hardly be mistaken. The finger on the pulse is trained to determine lesions of the circulation, and should rarely make any mistake.

The wrongs of the circulation may be general or local, and classified under the three heads, excess, defect and perversion. The first has reference to rapidity, the second to impairment or checking of the circulation, and the third may embrace cases in which the circulation is not uniform, or is irregular.

Increased frequency of pulse is one of the characteristic symptoms of fever, and is usually associated with a proportionate increase of temperature. As a rule, we estimate that ten pulsations represent one degree of temperature; that is, that for each degree of increased temperature we may expect to find an increase of ten pulsations per minute. There are many exceptions to this rule, the increased frequency of pulse being sometimes more, sometimes less, and indeed sometimes showing but little relation. As a rule, increased frequency of pulse represents gravity of disease, and we are accustomed to think of it as an unpleasant symptom. As is the frequency of the pulse, so is the arrest of secretion, the increase of heat, the impairment of digestion and blood-making, the arrest of nutrition, the development and progress of sepsis, the progress of inflammatory disease, and the danger to life, local and general. Hence the

importance of means which influence the circulation, reducing its frequency without impairing its freedom.

Frequency of pulse may be the basis of fever or inflammation, and when the pulse is brought down to a normal standard all the other phenomena of disease may disappear. Thus we often observe, under the influence of special sedatives, that as the frequency of the pulse is reduced the temperature falls, the nervous system is relieved, the skin softens and becomes moist, the urine is increased, the bowels move of themselves, and the appetite returns. Or, in case of inflammation, the pain ceases, there is less heat, redness and swelling, and resolution rapidly progresses to complete restoration. These results are so common that we are surprised in some seasons and in some cases to find that the sedatives do not seem to produce sedation.

This brings up the important point in the study of disease, that there is a *first* and predominant wrong upon which the entire morbid process rests. In some cases, as in the instances given, this is so markedly the case that when we have removed this the whole disease rapidly fades away. But in others this simply paves the way for the doing of something else, and this again for the restoration of other functions, and thus a succession of means may be required in a single case.

It will not do to say here, "I have frequency of pulse, and my patient requires a sedative," taking any one of this class at random. The ten or a dozen remedies grouped under this head are not alike, and cannot be used one for the other. It is true that we may so substitute veratrum and aconite in many cases, but even these had better be given according to the special indications—veratrum when the pulse is full, aconite when it is small. Then we have ferrum phosphoricum when the pulse is neither full nor small—a medium pulse—digitalis when the pulse is feeble, lobelia when it is oppressed and the artery is turgid with blood, gelsemium when it is full and vibratile, belladonna when it is full, soft, and without strength, etc.

Slowness of pulse is not a common symptom in disease, but is occasionally met with in chronic disease. It indicates a want of innervation, or excitability of parts supplied from the sympathetic. The wrong may be found in degeneration of tissue, or simply a want of waste and nutrition, the tissues becoming old and inactive. In some cases the pulse will be slow when the pa-

tient has remained quiet for some time, but is increased in frequency upon exertion.

These cases will be benefited by the use of small doses of cratægus, lobelia, digitalis or ergot, with the use of means to stimulate increased waste and nutrition.

Changes in the character of the pulse are of very frequent occurrence. In most severe diseases change in the character of the pulse will be found associated with frequency, and will probably point out the sedative which will be found most useful. Our examination of the pulse has reference to size, the movement of the mass of the blood, the impulse of the wave, its length, general character and termination, and the inter-wave current. A reference to any sphygmographic illustrations will show that there is very great variation in all of these, and that they do represent definite pathological conditions.

Irregular distribution of blood is frequently met with in disease, and a popular expression in treatment is, "equalize the circulation." There is no plainer pathological fact than that the circulation of blood is unequal in many instances—here too much blood, there too little—a want of circulation to the extremities and surface, too much blood in the cavities of the body. That such inequality is the cause of disease is very easily shown by many examples. Every one will recollect the cold feet and chilled surface that attends an ordinary bad cold, and will recall the local and general wrong that comes from a similar condition at the period of the menstrual flow, very greatly increased by the local stasis of blood in the uterus if the flow should be stopped. Many can recall cases of chronic disease, associated with cold feet and a tendency to chilliness of the surface from imperfect circulation, and they will recollect that such cases were very intractable. Some will recall cases of pneumonina or of typhoid fever, in which an irregularity of the circulation, and a tendency to accumulation of blood in the cavities, and a want of blood to extremities and surface, were prominent features, and they will recall the gravity of such cases.

As the mind recalls these well-known facts, the importance of equalizing the circulation will be seen. If in the commencement of a cold, means are employed to give an equally vigorous circulation to surface and extremities, the mucous membranes cease to suffer. If in chronic disease we so improve the circu-

lation that all parts receive an equal quantity of blood, we have accomplished one of the essential things necessary to recovery. If in severe local disease, or the graver acute affections called typhoid, we find an irregular distribution of blood and heat, getting well will probably depend upon our ability to rectify this wrong.

The local lesions of the circulation that interest us most are embraced under the head of hyperemia, or an excess of blood in a part. This has special reference to the capillary circulation, though arteries and veins are involved to a limited extent. The condition of local hyperemia is easily understood and recognized. In health the mass of capillaries are not full; indeed, it is impossible that they should be full at once. If there is an increased amount of blood in a part, with its motion unchanged, there will be increase of size—swelling—redness, if the part is superficial, and increase of temperature and sensitiveness.

Whilst it is possible to have the condition above named, it is uncommon. As a rule, there is a change in the rapidity of the circulation as well. Thus we divide hyperemia into two varieties, active and passive. In the one there is excess of blood in a part, with its movement increased, and in the other excess of blood in a part with its movement diminished. We call the first determination of blood, and the second congestion. It will not do to mistake these pathological conditions, as the treatment of one is almost the opposite of that of the other.

The cause of determination of the blood is *one*—irritation; and the condition of the part is one of excitation. The symptoms are very clear—there is swelling, heat, increased sensitiveness, and redness. In minor degrees the functional activity of organs and parts is increased; but when in excess, though the part is excited, the function is diminished.

If we now compare with this the condition of the capillary circulation in congestion, we will see that there is much difference. In this the capillaries are filled with blood, but the movement of the blood is sluggish, or entirely arrested in some vessels. The active life of the part is impaired to the extent of the impairment in the circulation, and all the expressions show dullness and want of functional activity.

Whilst there was but one cause for determination of blood, in congestion we may have three. The principal one of these

is an impairment of the life of the part—the structures being enfeebled, the capillaries yield to the force applied from behind the blood. In some cases an irritation of the part is a first cause, determining a greater amount of blood to it than its weakened vessels can withstand. In other cases an obstruction to the return current by way of the veins is a principal cause.

The symptoms are all of impaired function and oppression, and when we compare this with the excitation of the active state of determination of blood, the distinction will be clear. We say that the sensations are of fullness, weight, dullness, and if there is pain it will partake of these characters. The objective symptoms when near the surface are of swelling, and an increased redness that has not the brightness of the active circulation; the temperature may or may not be increased.

If we take some examples of the two conditions, the subject may be clearer. In determination to the brain, there is a flushed face (bright), bright eyes, contracted pupils, increased temperature and excitation of function—the patient being excited, restless and sleepless. In congestion the face is usually flushed (dusky, purplish or livid), the eyes are dull, pupils dilated or immobile, the mind is sluggish and the patient inclined to coma. If we take the lungs, we find in determination a rapid, uneasy respiration, characterized by quick movements of the walls of the chest, and the patient shows the excitation in the sharp, forcible cough, and frequent change in position to get relief. The functional activity of the lungs being increased, the color of the blood when it reaches the surface is brighter than usual, and the surface is therefore flushed. In congestion the movement of the chest is sluggish, labored and oppressed, and the cough has a like dull and oppressed character. The function of the lungs being diminished, the surface is inclined to be dull, dusky or livid. If we take a diarrhea as an example, the symptoms are quite as clear. With determination of blood there is marked uneasiness, and the evacuations are unpleasant or possibly painful and attended with some tenesmus. From congestion the bowels are tumid, have a sensation of weight and fullness, and the discharges are free and without uneasiness.

Whenever we find the two conditions, the symptoms will have the same character, and will be shown by the sensations and by the function of the part. In determination there is a

feeling of increased activity, and in congestion the feeling of impaired activity; in determination there is excited function; in congestion impairment of function.

As the cause of determination is irritation of the part, any agent which will remove this irritation becomes a remedy. As the circulation in its entirety is controlled by a system of nerves, a lesion of a part may sometimes be best relieved by an action upon the whole through the sympathetic. Determination of blood to any part may be relieved by the use of veratrum, aconite and gelsemium. Other than these general remedies, we select those that influence the special part affected, and remove irritation. In determination to the brain we use gelsemium; to the lungs veratrum, bryonia or ipecac; to the kidneys gelsemium; to the bladder eryngium; to the bowels ferrum phosphoricum, aconite and ipecac; to the uterus aconite and macrotys. In so far as we use local applications, they are selected in the same way: wet packs, poultices, fomentations, enemata, inhalations, etc., are selected with reference to their sedative character.

In congestion the part requires stimulation, especially stimulation through the sympathetic. It may also be influenced to a greater or less extent by remedies stimulating the circulation at large. Thus, belladonna, cratægus, ferrum phos., and, to some extent, aconite, are of value in all cases of congestion. Other remedies are selected with reference to their action upon the part, as stimulants or excitants. In congestion of the brain, we use belladonna; in congestion of the lungs or of the heart, cratægus or lobelia; in congestion of the abdominal viscera, nux vomica; in congestion of the kidneys, belladonna, etc. In selecting local applications we observe the same rule; whatever their form, they should be excitant to the part. In studying the action of remedies, we first wish to know where they act, and, second, the kind of action. If a part is diseased, we wish a remedy that acts upon that part particularly, and which does that which is necessary to restore it to health. In the case of determination of blood—the active circulation—we want a remedy that will remove irritation and the undue excitation of its circulation; in congestion we want a remedy that will increase the life of a part, or that will give the necessary stimulus to the capillary vessels.

According to Dr. Williams, inflammation is a local hyperemia, with the movement of the blood partly increased and partly di-

minished. We study this process of disease with reference to its cause, the lesion of the circulation, the exudation, and the result or termination. The cause is one, irritation with such impairment of vegetative life. From the irritation comes an increased circulation to the part; the capillaries are filled with blood, which in some moves slower and slower, until the circulation through them is arrested; and yet in others the movement of the blood still continues rapid. As the capillaries lose their strength and become thus filled, the fluid portion of the blood is exuded into the intercapillary spaces, or upon free surfaces. This completes the pathological process, and we next study its result upon the life of the part. If the original lesion has not impaired the vegetative life too much, or the lesion of the circulation has not been too great, we find that after a time these minute vessels regain their tone, and the circulation is re-established in them. As the current of blood commmences to flow through them, the material exuded is drawn into the current and carried away, thus leaving the part in its original condition. This termination is called "resolution," and is the result most to be desired in all cases. But if the life of the part be so impaired by the cause that it cannot renew itself, or if the impairment of the circulation be so great as to prevent its receiving the necessary amount of oxygen and the removal of carbonic acid gas, then it must die and be removed. This death and removal takes place in two ways—by suppuration, and by gangrene or mortification. In suppuration the process of death is modified by a lower form of life—the production of pus-cells from the formative cells of the part—and thus the remainder of the body is protected in part, and repair facilitated. But if the impairment of life is greater than this, the part dies, and is removed *en masse* by the suppurative process when the tissues still retain sufficient life.

The symptoms of inflammation, according to the old authorities, are pain, heat, swelling and redness, and for superficial parts these are characteristic and definite, but for internal and concealed parts we are obliged to rely upon the first, and the evidences of impaired function, and the influence upon the general health.

Pain is a very constant expression of inflammation, though it is very common from other causes. It varies from simple

uneasiness from over-excitation, to the sharpest and most severe suffering, and its intensity is not to be taken as the measure of inflammatory action in any case. It becomes symptomatic of inflammation only when there is evidence of a wrong circulation, and increase of temperature, general or local.

Heat is a constant symptom, and much more reliable than pain. It may be but local in superficial inflammation, or when but a small and unimportant part is affected, but is general when an important part or much tissue is involved. In some cases the patient's sense of heat may be taken as evidence, though this is very liable to error. As a rule, the temperature of an inflamed part will not rise higher than 102°, unless there is a corresponding elevation in the temperature of the body, and there is rarely more than one or two degrees difference between the general and local temperature. The sense of heat, when the hand is placed upon a superficial inflammation, is due in part to arrest of secretion from the skin, which is also the cause of any difference there may be in temperature.

Swelling is also a constant symptom, though not so marked when free surfaces are involved, or very dense tissues. It is not a reliable symptom, however, for it may be due to changes in the nutrition of a part, to growths, deposits and exudations. To be of any importance in diagnosis it must be associated with evidences of derangement of the circulation, and with increased heat.

Redness is only an evidence in superficial inflammation, and is due to the presence of a large number of red globules. It is deeper than in determination of blood, though it may be simulated by some rare conditions of the skin.

Among the prominent and most valuable symptoms of inflammation are wrongs of function; these are constant and characteristic. In the early stage of excitement the functional activity of some parts will be increased; but in a majority it simply shows excitement and is really impaired. As the capillary stasis increases, and exudation occurs, the function becomes more and more impaired, until in some cases it is completely arrested. Thus, in inflammation of the brain we have at first great mental excitement, then delirium, then probably incoherent (muttering) delirium, and finally, from exudation, coma. In this case the symptoms of the first and second stages are almost opposite—

active delirium and coma. In inflammation of the lungs we find at first increased activity and a rapid oxidation of the blood; but in the second stage there is oppression and an imperfect aëration of the blood. In inflammation of the liver there may be at first stage an increase of biliary secretion, whilst in the second there is complete arrest. So in inflammation of the kidneys, the first excitement produces increased secretion of urine, whilst the second may arrest it entirely.

The different phases of the inflammatory process and its results require care in diagnosis. Recognizing the presence of an inflammation, we want to know the danger to the life of the part, and to the life as a whole. In this respect it may be said that those cases of but moderate excitement are most favorable. When the vascular and nervous excitement are extreme, we may anticipate an unfavorable result, as well as when we have marked swelling and redness with impaired sensibility and arrest of function. The sensation given to the touch will be most reliable in external inflammations; the greater the departure from the normal standard the greater the danger to the tissues.

Suppuration is announced by an increased fullness of the tissues, a sense of increased tension, and a change in the character of the pain, which becomes throbbing. If but a moderate amount of tissue is involved in an unimportant part, suppuration is followed by relief of the general symptoms, but when considerable tissue is broken down, or important organs are involved, it is frequently ushered in with a chill, and attended by a fever having somewhat the character of hectic.

Gangrene of external parts is announced by the change in color—purplish or black—by coldness, and a want of sensibility. Internally it is announced by great prostration, the subsidence of pain, loss of sensibility, and a soft, feeble pulse.

The general symptoms are those of fever. The cause of inflammation is depressing to the life of the individual as well as to the life of the part, and when considerable structures are involved the expressions are very distinct. The first influence gives the listlessness, languor and loss of function; this culminates in a chill or rigor; and this is followed by the symptoms of febrile reaction—frequent pulse, increased temperature, arrest of secretion, and derangement of the nervous system.

In the severer cases of inflammation these general symptoms

are as pronounced as in fever, and it is sometimes difficult to determine a local lesion, except by close examination and attention to special symptoms. If care is used, however, a special wrong of function will attract attention to a part or organ, and symptoms of inflammation will be detected.

The close relationship between fever and inflammation should not be forgotten, and indeed it is well in practice to recognize them as requiring the same treatment; an inflammation is fever of a part. The remedies for fever are remedies for inflammation, and in many cases they are the best and most direct we have. If, in the majority of cases, the pulse is brought down to a normal standard, the temperature reduced, innervation normal, and the secretions restored, the inflammatory process will cease, and, if the life of the part has not been too much impaired, resolution will be rapidly effected.

In studying the treatment of inflammation, it is well to bear in mind the different phases of the morbid process. First, irritation and determination of blood; second, impairment of capillary circulation until its final arrest, and lastly, the impairment of the life of the tissues from this and the exudation. The irritation may continue through the entire progress of the inflammation, and thus will continually attract the blood to the part, whilst from the commencement there are marked evidences of impairment of tissue life.

Anything that will lessen or remove irritation will prove a remedy in inflammation. Take away the irritation, and you take away the cause of an excited circulation of blood to and in a part. The general means have been already referred to, but some of them are local as well. The sedatives, veratrum, ferrum phos. and aconite, influence the inflammatory process directly, wherever it may be located.

In the selection of local means we must closely observe the inflammatory process, and determine the kind of influence most desirable. In some cases it may be directly sedative, removing irritation; and in others, while we endeavor to remove irritation, we also keep in view the necessity of stimulation to the capillary circulation. The principal object, however, must be to employ such treatment as will increase the life of the tissues.

When we have determined by an examination that the inflammation must terminate in suppuration, we should not forget

that resolution goes on at the same time, and that it is our business to confine the suppurative process to as small a proportion as possible, and to obtain resolution as far as practicable. The treatment is just the same as in mortification; we wish to restrict the death to as small a portion as possible, and we do it by strengthening the life of the tissues.

The means named are those which might be embraced under the head of physiological medicine, and give us an excellent basis of treatment in many cases. In some we have special means, the action of which cannot be explained in this way. These remedies are indicated by some special expression of disease, and they prove curative in seemingly very diverse conditions of disease. As an illustration we need here but instance the action of tincture of muriate of iron in erysipelas; the action of bryonia, cimicifuga and rhus, and some other agents, in the arrest of special inflammations, or the special action of drugs on individual parts or associate functions, as phytolacca in mammary inflammation, or in disease arising from nursing.

CHAPTER XII.

INNERVATION IN DIAGNOSIS.

WE divide the nervous system into three parts for study—the brain, the spinal cord, and sympathetic. The first is the organ of conscious life, the second of automatic movement, and the third governs and associates the functions of vegetative life. The functions of the brain are reason, emotion, volition and sensation; of the spinal cord, the co-ordination of muscular action, and the functions of respiration, defecation, and urination, and expulsion of the uterine contents; and of the sympathetic, digestion, circulation, nutrition, and secretion and excretion.

Lesions of innervation may be due to a change in the condition or structure of the nerve centers, or to some lesion external to these. The more common lesions are of the circulation, and we have them from the two opposite conditions of an excited circulation—too much blood in a part; or an enfeebled circulation—too little blood in a part. Whenever we find these lesions, this is the first question we ask, and usually the symptoms of hyper-

emia or anemia will be distinctly marked. A physiological treatment will be based upon this, to a considerable extent. If we have hyperemia, we use remedies which lessen excitation; if it is anemia, we employ such agents as stimulate and give a more vigorous circulation. In the first cases the treatment may be temporarily depressant, in the second it is always restorative and tonic.

Delirium in acute disease is readily recognized. The inability to reason rightly, and the illogical and unreasonable expressions tell the story clearly. We say delirium is *active,* it is *passive,* it is coherent, it is incoherent—taking the entire range of that active continued expression, in which it is almost impossible to control the patient, to the dreamy delirium of typhoid fever, in which the patient is calm and still, or the muttering delirium that soon passes into coma.

But we are not so much interested in the expression of delirium as we are in the symptoms indicating the physical condition of the brain. We want to know whether there is an active circulation, or an enfeebled one; whether the patient can bear temporary depressants, or requires stimulants and restoratives. The practitioner will recognize the pertinence of this inquiry, as it points the way to the selection of direct remedies. In the first case we use the sedatives and associate means that relieve excitement, and the special remedy, gelsemium, In the second we use quinine, stimulants, restoratives, tonics and food.

It may be remarked here, that in addition to the means selected in this way, any remedy which may be indicated by special symptoms, is a remedy for delirium. Thus we see a delirium rapidly disappear under the use of an acid, an alkali, one of the antiseptics, rhus, and other agents. The two methods may be sometimes combined; though, if the symptoms indicating a single remedy are pronounced it should be first given.

In *delirium tremens* we also find two conditions of the brain as a basis for the wrong reason. Delirium tremens often arises from two opposite conditions of the brain—one in which the circulation of the organ is depressed, and the other in which it is too active.

If we find our patient with sunken eyes, blanched or livid lips, cold extremities, and a small and feeble pulse, we know

that he requires stimulants, and especially food. In the early stage of such a case we would expect to arrest its progress by the stimulant action of capsicum, strychnia, acetate of ammonia, nux vomica, hot broths and hot baths. If the stomach cannot retain food, enemas of hot beef-tea will act beneficially.

But if we find him with a florid face, full, bright eyes, increased temperature, and a full, hard pulse, we recognize a condition of undue excitement, and would hardly use the treatment just named, though it has proven successful in cases of delirium tremens. On the contrary, we propose to select remedies which will remove the undue excitement of the circulation and give rest to the brain. Thus we give full doses of veratrum and gelsemium, saline cathartics and diaphoretics, and possibly follow with bromide of potassium, chloral and morphine.

If we study puerperal mania, or acute insanity, we find two classes of cases, as in delirium tremens. In one, from excessive discharges and lactation, we have a condition of anemia. We find the face pallid, the eyes dull, the tongue broad and pallid, the pulse small and feeble, and the extremities cold. We at once recognize that this patient wants proper stimulants, tonics, restoratives, and food, and as we give them we find that there is a steady improvement.

But in other cases we find a flushed face, full, bright eyes, contracted tongue, increased temperature, a full, hard pulse, and partial arrest of secretion. The case is just as clear as the first one, and we cure it by the use of the proper sedative, gelsemium and means which will restore secretion and excretion. In this case temporary depressants may sometimes be employed with good results.

In chronic mania, the diagnosis of the physical conditions of brain and body will be made in the usual way. All wrongs of function and structure are to be removed as far as possible, and the patient placed in the best possible health. Thus, if there are any special indications for any single remedy, this should be given. In some cases the action of such agents is very speedy and permanent.

With regard to the psychological treatment, but little need be said. It must be based upon this law of nature,-"that in proportion as an organ or function is used it gains strength, and as it is disused it loses strength." In so far as the morbid mind

has material to feed upon, and has exercise, the insanity will be increased; and in so far as the normal functions of the mind are disused they become enfeebled. The object, therefore, is to call out the mind in orderly channels as much as possible, and to give as little cause for the insane manifestations as possible, that the one may gain strength and the other lose it.

What has been said with reference to reason is applicable to the emotions, in so far as the necessity of recognizing the physical lesions are concerned. Emotional wrongs have a physical basis, and if perfect health can be restored they will pass away. Indeed, permanent cures can only be effected in this way.

The wrongs of the emotions may be in either of the three ways—excess, defect, and perversion—but the first and last associated are usually met with. The expression is so distinct that it can hardly be mistaken; too great a manifestation and rapid alternation of grief, joy, hope, fear, exaltation, depression, etc., without sufficient or corresponding cause, tells the story. Hysteria is the type of this class of diseases, though it involves other than the emotions.

A defect in volition is often noticed as an element of mental disease, and as an attendant upon some other diseases. It is often remarked that the strong will is an important means of recovery—"that when one *wills* to get well, he will get well"—and every practitioner will have noticed the difficulty of managing those cases in which there was an indifference, or want of volition. The expression of the face will frequently give this information before a word is spoken. The firm expression of the muscles of the mouth and closure of the jaws, is characteristic of strong will; whilst the relaxed muscles of the mouth, and the general want of expression, tells of enfeebled will.

In many cases recovery will largely depend upon strengthening the will. If we can call it into action by presenting additional motives for its exercise, or by a judicious stimulation from attendants and friends, we will find that it will grow by exercise, and that which was difficult to the patient at first soon becomes easy and natural.

The brain receives impressions from the world without, and from the various parts of the body, through the apparatus and nerves of special and general sense—and this we call sensation. In the healthy body all sensations from it are pleasurable, and

the use of the special senses is a source of pleasure. But in disease sensation is unpleasant, and a source of discomfort, and we designate it as pain. It is well to become thoroughly conscious of this, by passing the various sensations in review. To the sound eye use is a pleasure, and we only know the organ through the pleasurable sense of vision; the impulse of sound-waves upon the ear is pleasurable, and so are senses of taste and smell.

When this sense of pleasure is lost, we may know that an organ or part is diseased, though the discomfort may not tell us the quality or amount of disease. If the use of the eye becomes a source of discomfort, our attention is called to that organ as the seat of disease, and we at once make a proper examination to determine its character. If the use of the ear is a source of discomfort, we at once conclude that it is the seat of disease, and we make the necessary examinations to determine its exact character. If there be discomfort in the sense of taste, we know there is a wrong in the mouth where these nerves are distributed, or of the digestive apparatus to which these nerves stand sentinel. If there be discomfort in the sense of smell, we at once conclude there is disease of the nasal cavities. So when there is discomfort from any apparatus or function, we proceed with the proper examinations to determine its character.

Persons will sometimes have their first knowledge of organs or functions through discomfort and pain. The dyspeptic realizes that he has a stomach through pain; the minister realizes that he has a larynx, when it has become irritable and painful by abuse; the location of lungs, liver, spleen, bowels, kidneys, bladder, uterus, etc., is first realized by many through the suffering of disease.

It is well to bear in mind that pain may have two causes—it may be due, in principal part or in whole, from disease of the part that suffers, or of the brain that receives the impression. To determine this is an important part of the diagnosis of pain. A little care in noting the expression of the face, the eyes, and the other functions of the brain, will determine this in most cases, and this may be supplemented by a careful examination of the part.

The diagnosis between the pain of structural disease and

neuralgia is usually made with ease. The absence of heat, redness and swelling, in any considerable degree, is usually sufficient, but in obscure cases it is well to carry the examination further to determine lesions of the blood, of nutrition, waste and excretion.

General disease will give rise to the conditions of pain, and to a considerable extent may be considered its cause. Thus, the vascular excitement and increased temperature of fever render the brain more sensitive to impressions, and the nerves more active purveyors. The symptomatic fever that attends inflammation has the same influence in increasing pain. Thus, in those cases where pain is very severe, the means that lessen the frequency of the pulse, diminish the temperature, and establish secretion, are the most effective to cure pain.

When we study the condition of the brain as a cause of pain, we find that it is not one, as generally supposed, but two, possibly three. In one case we have evidence of vascular excitement in the flushed face, bright eyes, contracted pupils, and increased temperature. And we meet this condition with gelsemium, the sedatives, and possibly the saline diuretics and cathartics. In the second case we find the evidence of an enfeebled circulation in the pallid, expressionless lips, the dull eyes, dilated or immobile pupils, and possibly the coolness of nose, ears and forehead—the general expression is of want of stimulus. In these cases we think of nerve stimulants, of belladonna, quinine, nux, ammonia, etc. The feeling of dullness and inclination to sleep attending some forms of pain is met especially by belladonna and ergot. The wrongs of perversion are not so easily determined, but with care we may find the indications for special remedies, sometimes in the expression of the face, sometimes in the appearance of the tongue, and sometimes in the changes of the pulse.

There is no doubt that many times the character of the pain may point out the special remedy for the cure of the disease, though it is not as certain as other means of diagnosis. If *we* could feel the pain, as we feel the pulse, it would be different, but trusting to the patient's uneducated senses, and his imperfect power of analysis and expression, we find it uncertain.

Lesions of spinal innervation are diagnosed from wrongs of function controlled by this nerve-center. Thus, impairment

of muscular motion may be referred to an enfeebled spinal cord, an exalted sensibility of muscles, to increased spinal innervation, whilst all forms of convulsion may be attributed to perverted spinal innervation. Among the important functions controlled from the spinal cord is that of respiration. We will sometimes find deficient respiration, that physical examination will determine is not from structural disease, and we reach the conclusion that it is want of innervation. In acute disease we sometimes find this so marked that respiration cannot be carried on except through the influence of the will and the external respiratory muscles. We notice that, so soon as the patient sleeps, respiration becomes more and more difficult, until at last he is suddenly aroused by a feeling of asphyxia; thus rest is prevented, and death may result. In all of these cases we think of spinal stimulants as remedies, nux vomica and strychnine being the type; and, increasing spinal innervation, we find our patient breathes easier, and gets necessary rest.

The lesions of excess are rather rare, but still they deserve close study. We find it marked in some cases by excessive muscular irritability, so that the patient exhausts himself by overexertion, or more frequently by that uneasiness which might be called muscular fret. In others the lesion is principally manifested in the respiratory muscular apparatus, giving frequent or irregular respiratory movements—respiratory fret—or sometimes severe and intractable cough from very slight internal irritation. In other cases we find the evidence in defecation and urination, giving frequency and some tenesmus, without corresponding internal disease.

In these cases there is usually hyperemia of the cord, marked by a full, hard pulse, tense skin and muscular structures, and rigidity or contraction in all the expressions of the body. The remedies will be veratrum, gelsemium, the saline cathartics and diuretics, alkaline bath, etc.

In some rare cases there is a condition of anemia, and the patient requires nux, strychnine, quinine, iron, arsenic and stimulant baths, with restoratives and animal foods.

The lesion of perversion gives us the entire series of convulsive affections, so frequently met with in the practice of medicine. In this case the spinal cord takes complete control of the body, and sets it into disorderly movement. How the wrong

is produced, or what is its exact character, is not known, but when once it has obtained, the tendency is to its repetition. There is no difficulty in its recognition; the complete arrest of the function of the brain, and the disorderly activity of the muscles, are so marked that it cannot be mistaken.

Two causes of convulsions are recognized; the one disease of the spinal cord itself—intrinsic, the other a lesion of some other part—extrinsic. The exact conditions of the spinal cord are not well known, but we may recognize one of vascular excitement and one of atony and impaired circulation. In the first the surface and face are flushed, the eyes bright and pupils contracted, the pulse somewhat full and hard, and the temperature usually increased. In the other the face is pallid or livid, the eyes dull, the pupils dilated in the intervals of spasm, the extremities cold, and the pulse small and frequent. There is a third case in which there is very evident congestion of the cord, and the face will be full and dusky, the eyes protruding, and the pulse full and oppressed.

These cases are usually so well marked that the diagnosis is not difficult, and a correct treatment is at once suggested. In the first case we use gelsemium, passiflora, or veratrum. In the second case we use lobelia, chloroform or bromide of ammonium; in the third case, belladonna, ergot, and possibly aconite. Bromide of ammonium is sometimes an excellent remedy here.

It is most absurd to think of treating all cases of convulsions with one prescription. Specific Medication never goes that far; it treats conditions of disease, and not diseases as classified. The instance of convulsions furnishes a very good example of the necessity of accurate diagnosis.

It is well to note here that the spinal cord having formed a habit of convulsive action, has a tendency to repeat this at varying intervals, even though no change of structure, or disease of other parts, can be found to account for it. In addition to the treatment for the convulsions, this habit or tendency to recurrence is to be broken up, and we find in many cases that the longer the convulsive action can be postponed the less disposition there is to its recurrence. In the treatment of some cases of epilepsy this is a principal object, and any means which will even temporarily ward off an attack becomes a part of the cure.

The extrinsic causes deserve consideration, though many

times they have ceased before we are called to treat the cases. If in infancy we find the gums swollen and purplish, a free incision over the coming tooth may relieve the convulsion at once. If green fruit or other irritant ingesta has proven a cause of convulsions through irritation of the stomach, an emetic will give the speediest relief. If it has come through irritation of the solar plexus, attended by pain—colic—nux vomica will give relief. If from irritating materials in the intestine, cathartic enemata may be of great service. If from partial suppression of urine, the hot packs over the loins, with gelsemium or apis, will be the treatment.

Worms may be a cause of convulsions, and yet it is not advisable to give the usual remedies for worms until all symptoms of nervous irritation and convulsions have been removed. Otherwise the additional irritation from the worm medicine may prove fatal.

In epilepsy the original cause may pass away in a few hours, or it may persist for years. Thus in some cases an epilepsy will arise from a temporary irritation of the stomach, the intestinal canal, or the reproductive apparatus, and no traces of the lesion will be found when we are called to treat the patient. But in other cases the lesions will persist, and their occasional or periodical increase will determine the convulsion. Thus, menstrual derangement may prove a continuous cause, as will disease of kidneys, stomach, bowels, and some other parts. In all cases the examination is carefully made to detect local lesions, and, when found, means are employed to remove them, as part of the cure.

The study of *paralysis* might follow the consideration of the lesions of the brain and spinal cord, as it may embrace either or both. When the lesion is one of the hemispheres of the brain, the paralysis is of one-half of the body, divided vertically, and is called hemiplegia. When it is of the spinal cord, it is of the lower portion of the body, the division being horizontal, and involves all parts below the seat of disease; this is called paraplegia. When of but limited extent, we call it local paralysis, and we trace it to a lesion in the course of the nerves, or to a limited disease of the center from which the nerve has its origin.

We must not suppose that when we have diagnosed a paraly-

sis by the impairment or total loss of motion or sensation, or both, that we are ready to make a prescription, and that all that is necessary to be done is to stimulate the nerve centers or the affected parts, by strychnia or electricity. We want to know the character of the wrong, both of the nerve centers and of the general health, and when we have determined this we can prescribe intelligently.

In hemiplegia we find two conditions of the brain. In one case we will have a flushed face, bright eyes, contracted pupils, increased temperature, impaired excretion, and a pulse characterized by fullness and hardness. Surely no sane person would treat this case with nux or strychnine. On the contrary, we use the proper sedative, gelsemium, means to establish secretion, and possibly suppurative counterirritation. In a second case the face is swollen and dusky, the lips livid or purple, the eye dull, pupils dilated or immobile, and the pulse full and oppressed. This patient wants belladonna, ergot, bromide of ammonium, and, possibly, stimulating cathartics. In a third case the head is cool, the face lacks expression, and the pulse is nearly normal, but wants force. Every symptom points to anemia of the brain, and to the want of restoratives. Here we give nux or strychnine as nerve stimulants, the bitter tonics and good food.

The diagnosis will take the same course in acute paraplegia, and the same means will be used in its treatment. When it has been preceded by an injury, or by inflammation, we wish to determine as nearly as possible the condition of the part, and whether or not the lesion has destroyed the nerve structures. Even here the treatment may be rational. We do that which needs doing, whether it be to promote the removal of organized lymph, or of water, or by an increase of waste and nutrition gradually renew the diseased structures until they are capable of doing their work.

Wrongs of the sympathetic nervous system are so intimately associated with lesion of the vegetative functions that we find difficulty in separating them. Possibly it is only where an important part or the whole of this system is involved, that it requires special study. We may classify these lesions as an excess, defect, or perversion, though the excess is more an undue excitation than an increase of power.

We will find this excess marked in an unnatural and unaccountable frequency or hardness of pulse, and an unpleasant irritability of the organs of digestion and secretion. There can be no improvement until we can have better innervation. In such cases veratrum has a most excellent action, and, followed by arsenic, will frequently effect cures in very stubborn cases.

Defect is marked by a feeble circulation, the artery giving the sensation of want of tone or elasticity, and all the vegetative functions are feebly and imperfectly performed. That it is not due to a wrong of the organs themselves is readily determined by other symptoms. In these cases the needed remedy must be selected by the special symptoms.

Perversion of sympathetic innervation is shown by irregularity in the performance of the vegetative functions, and by changes in the character of the pulse, other than frequency, strength or feeblenesss. The remedies will be selected in accordance with specific indications presented.

The association of the sympathetic with the spinal nervous system gives us that condition of disease known as spinal irritation. It is of frequent occurrence in chronic disease, and, when marked, is sufficient to prevent a cure by the ordinary means, being a continued source of wrong innervation. It is a little singular that the source of this lesion of the spinal cord should always be an organ supplied from the sympathetic, and that irritation should be so readily propagated backward along these nerves. Yet it is a fact that a disease of irritation cannot exist long in an organ without some disturbance of the great sympathetic, and the spinal cord immediately behind the ganglion, that furnish the nervous supply.

Spinal irritation is usually marked by tenderness on pressure over the bodies of the vertebræ, and when such tenderness is found it is taken as evidence of this lesion. But once in a while we will find the evidence at some distance from the spine, but always in the course or termination of the posterior spinal nerves.

It was proposed by Prof. John King to determine the locality of chronic visceral disease by an examination of the spine, and this can be done where there is spinal irritation. If the reader will refer to a text-book on anatomy, he will see that the dis-

tribution of sympathetic nerves and connection with the spinal cord is very simple. The sympathetic ganglia send off large nerves, which before their distribution form a network, called a plexus, and from this the nerves are distributed upon the nearest arteries. Thus if we know the source of nerve supply to a plexus, and the distribution of the arteries nearest to this, we will readily make the association between a particular part of the spinal cord and a special organ or organs. It might be remarked that the connection between the cord and the ganglia which lie upon the bodies of the vertebræ in front, is immediately backward and forward by filaments of communication, and that a limited portion of the gray substance of the cord is thus asssociated in action with a ganglion.

The first cervical ganglion sends its branches upwards on the carotids, to supply the brain and the organs of special sense; and a nerve downward, which through the cardiac plexus is distributed to the heart; thus to a certain extent associating the brain and heart in action. The other cervical ganglia send nerves downward to the cardiac plexus, which supplies the heart and to some extent the lungs. The upper dorsal ganglia send off the great splanchnic, which, passing through the diaphragm, forms the solar plexus, and from this the nerves are distributed upon the cœliac axis to the stomach, liver and spleen, and upon the superior mesenteric to the small intestine and pancreas. Branches from this pass downwards upon the spermatic artery to the testes in the male and the ovaries and uterus in the female. The lower dorsal ganglia furnish the lesser splanchnic nerves, which form above the renal arteries the renal plexus, and furnish nervous supply to the kidneys, ureters and bladder. The dorsal ganglia furnish nerves for the formation of the hypogastric plexus, which gives nervous supply to the pelvic viscera. The sacral ganglia furnish nerves for the sacral plexus, which supplies some parts at the outlets of the pelvis, and the lower extremities.

The above is but a brief synopsis of this subject, and the reader will do well to give it a thorough study, and trace out the distribution of these nerves on an anatomical plate. It will be found that there is a free intercommunication between the different parts, some more especially than others, and thus many sympathies observed in health and disease can be accounted for.

It will here be necessary to determine the exact condition, for it is not always the same. Possibly our old division will serve our purpose, classifying them with reference to vascular excitement and enfeebled circulation, or anemia.

The case of vascular excitement will be shown in the bright eyes and contracted pupils, slight increase of temperature, and a pulse that has hardness and undue vibration as an element.

The case of anemia of the cord will be recognized by the dull, sunken eye, feeble circulation to the surface and extremities, and a pulse that wants strength. In many of these cases the skin is relaxed, and there is undue exudation.

Cases are occasionally seen which are marked by a full, sluggish and oppressed pulse, dull eyes and dilated pupils.

The treatment in these cases should be selected in accordance with the symptoms presented.

CHAPTER XIII.

THE DISCHARGES IN DIAGNOSIS.

IT is well to give careful attention to the discharges from the human body, for they not infrequently tell a story of more or less diagnostic value.

The discharges from the nose are of local significance, and indicate changes of function and structure in these cavities. In measles and typhus, catarrhal symptoms are among the most prominent, and in the first are almost pathognomonic; but these and epidemic influenza are the only instances where the disease is referred to the blood.

The thin, glairy secretion is evidence of irritation and determination of blood; the white of egg-looking mucus, of active inflammation, and an indication for kali mur. The yellowish, glairy discharge of commencing suppuration—muco-pus—is well treated with calcarea fluorica and kali phosphoricum, and the opaque, yellowish, non-tenacious secretion, of the subsidence of inflammatory action, by kali mur.

Dryness of the anterior nares is usually referred to scanty or arrested lachrymal secretion; too much moisture of the anterior nares, thin, watery, to increased lachrymal secretion. For

the dryness calcarea fluorica and kali mur. have been employed with much success, and in the thin, watery discharge, kali sulphuricum and natrium muriaticum are useful remedies.

In chronic disease of the nasal cavities the condition of the parts is pretty clearly shown by the character of the discharges, which have the entire range of mucus, muco-pus and pus. In determining the diagnostic value of these discharges, we will be guided by the same rules as in other situations. We wish to know the physical properties of normal mucus, and of normal pus, and we then will have a standard of comparison. In acrid discharges from the nose silicea will prove the needed remedy.

The discharges from the mouth proper are of saliva with some mucous secretion. But through the mouth we have all the discharges from the respiratory tract below, of mucus, pus, blood, exudative material, etc. We also have occasionally discharges from the digestive tract, the stomach, upper small intestine, and secretion from the liver.

The *saliva* normally is a thin, transparent, slightly viscid fluid, with a marked alkaline reaction to litmus paper. If it loses these properties in degree, or is increased, we will conclude that the first act of digestion is improperly performed. Physicians have not been properly impressed with the importance of buccal digestion, and frequently direct their remedies to the stomach when it is not at fault.

Dryness of the mouth evidences arrest of secretion, and necessarily impairment of the digestive process. If the salivary secretion is found to be scanty, we anticipate a wrong of digestion, especially of starchy foods, and a wrong of nutrition. It is usually associated with excitation of the nerve centers, and local disease presents unusual irritation. We have the same results where the saliva is constantly thrown off in chewing and smoking.

Increased secretion of saliva is found as a symptom in some forms of chronic disease, and occasionally in acute disease. If marked, it interferes with digestion, and is a cause of depravation of the blood. The tendency is always to low grades of albuminoid deposits—cacoplastic or aplastic.

In acute disease the remedies will be the alkaline sulphites or sulphurous acid, or sometimes chlorate of potassium, or natrium muriaticum. Quinine and nux vomica are thought of for

the wrong of innervation, and hydrastis, aconite, ipecac, ferrum phosphoricum and podophyllin for the wrongs of the intestinal canal. The same remedies will be applicable in chronic disease, and in addition we may think of phosphorus, sulphur, and sometimes arsenic.

It is hardly worth while to speak of changes in the character of saliva as regards its viscosity, as it is always associated with excess in quantity, and the indications for remedies will be as above. Attention should be called, however, to the need of antiseptics in these cases, for very surely we will have sepsis as a prominent feature in the progress of acute disease. If the proper antiseptic is selected, whether sulphite of sodium, sulphurous acid, chlorate of potassium, baptisia, echinacea, or muriatic acid, this symptom will pass away.

The reaction of the secretions of the mouth to test paper will be found to vary, and this will sometimes indicate the class of remedies to be selected. The alkalinity may be markedly increased, and acids will be associated with remedies to influence the digestive process. In such a case, with dyspepsia, muriatic or lactic acid, largely diluted, with the addition of a small portion of nux, will cure when the ordinary means have failed. In infantile dyspepsia we sometimes find the saliva neutral, or in rare cases the secretions of the mouth are slightly acid. We find the same conditions in the adult, though not so often nor so marked. In such cases we would give hydrastis and natrium phosphoricum, and expect the patient to amend rapidly.

Ejections from the stomach as a result of disease sometimes afford valuable information. Eructations in dyspepsia are very acid or feebly acid. The first is very common, and is usually met by an alkali or bismuth, though experience shows that this is not good treatment. It is associated with hyperesthesia, demanding aconite, hydrocyanic acid, rhubarb, ipecac and like remedies. The second evidences a condition of atony, and suggests muriatic and lactic acids, with hydrastis and similar bitters, podophyllin, etc.

Eructations containing a yellowish or yellowish-brown coloring material, and of a bitter taste, show irritation of the upper small intestine, and sometimes an irritation of the entire chylopoietic apparatus. The remedies will be chionanthus, kali muriaticum, and such as prove sedative to these parts.

Blood in the discharges has a variable significance. If in small quantities, during violent vomiting, we may conclude that some minute vessels have given way; if dark-colored and clotted, we conclude there is passive hemorrhage—usually from congestion, except in the rare case of ulceration, with erosion of some of the vessels, when the discharge may either be of bright or clotted blood. In passive hemorrhage ipecac will prove efficient.

Vomiting of considerable quantities of mucus is occasionally noticed in persistent atonic dyspepsia, and its therapeutic value will be obvious. Vomiting of pus is at once referred to ulceration, the result of chronic inflammation, and calls for natrium phosphoricum.

The "black vomit" of yellow fever, and some rare cases of congestive, intermittent and remittent fevers, shows the breaking down of the blood, as well as the congestion of the digestive mucous surfaces. The remedies here suggested are echinacea and small doses of ipecac.

The discharges from the respiratory tract are of mucus, pus, blood, and the material of exudation. We wish to have a clear idea of the origin and value of these discharges, and senses trained to recognize them when seen. In health the respiratory mucous membrane is continuously lubricated with mucus, but it is not in quantity to be discharged by mouth; even the increase of quantity is evidence of disease.

If mucus is thin, glairy, and very tenacious, we know that it comes from a mucous membrane in a condition of great vascular excitement—inflammation. The more marked these properties, the more active the excitement. We see it in minor degree in catarrhal bronchitis when secretion is first established. The typical remedies are veratrum and bryonia.

The *opaque* mucus, not so tenacious, is associated with a subsidence of the inflammation and resolution. The quantity may be such as to enfeeble the part or the patient, but other than this it is regarded as a favorable symptom. The reader must not suppose from this that abundant opaque mucous discharges are *essential* to recovery, for they are not, and the patient convalesces better if the discharge is never in excess, and but little changed in character. The typical remedy is ipecac. Change of color evidences local structural disease, and disease of the blood, whatever the color may be. Shades of yellow

and green show suppuration—the discharge is more or less purulent. Shades of brown, if not from blood in this discharge, show a low grade of inflammation and impairment of the blood. In some of these cases the discharges look like "prune juice," or still worse, like the washings of spoiled beef. The remedies here indicated are echinacea and baptisia.

Globular sputa is characteristic of pneumonia, as the glairy, tenacious mucus is of bronchitis. So marked is this character of the expectoration in inflammation of the parenchyma of the lungs, that it is evidenced not only in the single portions of mucus expectorated, but when the patient spits in a vessel they all run together to form a globular mass.

The *cheesy* expectoration, lacking consistence, seeming to be somewhat granular, is usually regarded as tuberculous. Whilst there are exceptions, it is probable that it may usually be regarded as evidencing aplastic or cacoplastic deposits, and a condition favoring tuberculosis, if it is not broken down tubercle.

Masses of desiccated mucus are sometimes expectorated that are well calculated to deceive. They are in larger and smaller granules, and fully meet the popular idea of tubercular deposit. Yet when we take a portion and soften it with water on a glass, it gives the glairy, tenacious mucus, and not the friable tubercular matter. These little bodies are evidently from accumulations in mucous follicles, principally in the larynx, which are forced out in the act of coughing.

Pus from mucous membranes will in appearance take the entire range of this product. It is usually admixed with mucus, and thus has greater consistence. It is laudable, or bad, thin, thick, bland, ichorous, yellow, green, brown, etc. It evidences local destruction, though it may be but superficial, the relationship between mucus and pus being very intimate. The gradations of pus have the same significance here as elsewhere.

Blood may be discharged from the throat and pharynx, from the stomach, from the larynx, and from the lungs. From the throat and pharynx it is of usual color, is not frothy, and is ejected by an act of the will. Blood from the stomach is of darker color, is sometimes admixed with food and the secretions of the stomach, or is in part clotted. Blood from the larynx is but little frothy, is of usual color, and is in part discharged by an act of will. Blood from the lungs is usually *bright, frothy,*

and wells up into the mouth without the consciousness of the patient.

We always want to know whether hemorrhage is active or passive, as the treatment will depend upon this. Very fresh and bright blood would evidence active hemorrhage, whilst deeper colored blood would evidence passive hemorrhage. Yet we will find better evidence in the color and expression of the face and in the pulse. Active hemorrhage calls for veratrum and styptics, whilst passive hemorrhage refers us to erigeron, ipecac, gallic acid and ergot.

Mucus streaked with bright blood evidences inflammation, and is seen in sthenic bronchitis. If the blood is less bright it evidences a lower degree of inflammation, or rather impairment of the life of the part, and if it assumes the "prune juice" character, it evidences an unpleasant condition. The blood in the sputa of pneumonia is *rusty,* and may be found perfectly admixed with the mass of mucus, or forming a central nucleus. If here it becomes brown, or has the "prune juice" character, it evidences a low grade of inflammatory action and impairment of the life, and calls for baptisia and bryonia.

We occasionally see exudative material. First, as fibrinous exudations from the mucous surfaces, in croup and in croupous bronchitis; second, as broken down material from the parenchyma of the lungs. The last is sometimes very characteristic, but at others it is so masked by the bronchial secretions and by the breaking down of the structures that we can hardly recognize it. Call it cheesy, friable, and the fluid differing in character from laudable pus in consistence, color, etc., and the reader will get a fair idea of it.

The discharges from the bowels also have a story of some interest to tell. We will, therefore, give them due attention, and so arrange our inquiry in regard to the feces that it will have reference, first, to the increase or diminution of the secretion; second, to the condition of the intestinal canal as an apparatus for digestion; and third, to any abnormal constituent or marked change in the character of the excretion.

Increase of the feces, in proportion to its extent and duration, causes debility; for histogenetic material, either as food or tissue, is proportionately removed.

Fluid feces, whilst very frequently in *excess,* as above,

deserve attention more particularly as evidencing such lesion of the intestinal canal as interferes with digestion and blood-making; and also with that due degree of distension of the blood-vessels which is necessary to proper circulation.

Deficiency of the feces may depend upon the quality of the food, or upon its quantity; the largest proportion of fecal material being furnished by the débris of food; or it may depend upon an arrest of secretion, in which case we will have the same constitutional evidence that we would have in similar arrest from the skin and kidneys; or it may be dependent upon atony of the intestinal canal, which allows the material to accumulate, without the natural effort at removal.

Simple *constipation* gives rise to derangements of digestion, and the retention of effete material in the bowels occasions a feeling of *malaise* and dullness, with headache and fever, in so far as they are retained in the blood, or reabsorbed.

The *color* of the discharges is sometimes of importance in determining the character of the disease. The natural color, like the natural fetor, evidencing a condition of the intestinal canal in which its functions may be properly performed.

The *dark-brown* or almost *black* color of the feces, observed in typhoid disease, arises from the excretion of the coloring material of the blood, the red globules being broken down rapidly.

The use of iron in any of its forms, and occasionally of sulphur or its salts, will darken the color of the feces. The *dark-green* color of the feces that followed the administration of mercury, and was thought to be bile, was due to the formation of *sulphuret* of mercury.

Greenish discharges are generally dependent upon an increase of acid in the intestinal canal, with irritation and consequent indigestion. It may in part be dependent upon the coloring matter of bile, which is thrown off by the feces in consequence of such irritation.

Clay-colored discharges refer to a general want of secretion; not only of the solitary glands of the intestine, but of the associate viscera. It is an atonic condition, with impaired innervation and circulation.

The natural *odor* of feces seems to be dependent upon a special secretion in the neighborhood of the cecum. It may be

regarded as an evidence of normal activity throughout the entire intestinal tract.

Diminution of odor is an indication of want of functional activity, as an increase will indicate increased activity

Fetor refers to decomposition of the intestinal secretions. It varies greatly from local causes, and cannot be relied upon as indicating any special condition of the general system.

The *cadaverous fetor* may, however, be taken as evidencing a septic condition, not only of the intestinal secretions, but also of the fluids and solids.

It being somewhat difficult to determine changes in the elements of feces, and such determination not often being necessary in ordinary examinations, we will not enter further into the subject than to give the following quotation from Prof. Lehman's "Chemical Physiology":

"The excrements in consumption are sometimes found to contain more *fat* than usual. *Sugar* is occasionally found in the feces of diabetic patients. The stools are found to be black, chocolate-colored, or tar-like, when blood is contained in them, and this arises from the upper intestinal canal; so also the semi-liquid, green excrements, which are observed occasionally in typhus and other diseases, depend upon blood, which is easily recognized by the microscope. Soluble *albumin* is found in the stools in dysentery, typhus, and occasionally in Bright's disease and in cholera. The greatest quantity of epithelial cells is found in the dejections of cholera. *Cytoid corpuscles* are very numerous in the excrements in catrrhal diarrheas, in dysentery, and occasionally in typhus and cholera. *Hyaline mucus* is observed in the excrements in catarrh of the large intestine; it arises from the follicles of the colon, and contains round or oval pale or granular cells and cell nuclei. *Fibrinous exudations* occur in the feces in follicular ulceration and in dysentery."

The discharges from the urinary apparatus will be fully studied in a separate chapter.

CHAPTER XIV.

THE URINE IN DIAGNOSIS.

The urine is the most important fluid excretion, for by it nearly all of the nitrogen of the used up proteid leaves the body in the form of urea. It may not, therefore, prove devoid of

profit to briefly review the leading processes connected with the excretion of urine, before considering the importance of its careful examination as a means of diagnosis.

The Construction of the Urinary Glands.

The kidneys may be called complex and tubular glands, because the tubes of which they are composed are made up of a number of parts essentially differing from one another, both in their structure and in their relation to the blood-vessels.

The tubes begin by a small, rounded dilatation—called the Malpighian capsule—which is lined by thin, flattened epithelium. Opening from this capsule is found a tortuous tubule, lined by peculiar, large, rod-beset epithelial cells, which occupy the greater portion of its diameter. This convoluted tubule leads into a tube of much less external diameter, but about equal lumen, owing to the thinness of its lining epithelium, the cells of which are more flattened and much thinner than those in the tortuous tubes. This thin tube forms a loop extending down into the medullary pyramid and returning to the cortex, where it can be seen to become again consolidated and then to open into a straight collecting tube. The collecting tubes receive many similar tributary tubes on their way toward the apex of the Malpighian pyramid, where they pour their contents into the pelvis of the kidney. The epithelial lining of these collecting tubes is of the ordinary cylindrical type.

It is thus found that there are four kinds of epithelial cells in the various parts of the urinary tubules, namely: scaly cells in the capsule; peculiar, rod-beset glandular cells in the convoluted tubes; flattened cells in a great part of the loop; and ordinary cylindrical cells in the large straight tubes.

The renal artery, on its way from the hilus to the boundary between the cortical and medullary portions of the kidney, breaks up suddenly into numerous small branches; these vessels then form arches which run along the base of the pyramids. From the latter, straight branches, called interlobular arteries, pass toward the surface, and give off lateral branches, which form the afferent vessels to the neighboring Malpighian capsules. Within the capsules the afferent arteries at once break up into a series of capillary loops, forming a kind of tuft of fine vessels,

the *glomerulus,* which fills the cavity of the beginning of the tubules, and is only covered by thin, scaly epithelial cells, and thus separated from the urine. It is a singular fact, that in the renal circulation the efferent vessel, on leaving the glomerulus, does not, like most veinlets, unite with others to form a large vein, but again breaks up into capillaries, which form a dense network around the convoluted tubules. The blood is thence conveyed to small, straight veins corresponding to the intralobular arteries.

Another striking peculiarity of the renal vessels is that a distinct set of arteries, starting from the same point as the intralobular (between the cortex and medulla), pass toward the center of the gland into the pyramids. They consist of branches of straight arterioles, which lie between the straight and the looped tubules. Corresponding with these straight arteries are minute straight veins, which carry the blood back to the vessels at the base of the pryamids.

In the kidney, then, we have three sets of capillary vessels, which differ in their position, the form of their meshes, and their relation to their parent artery. Probably the pressure exerted by the blood in them, and the rapidity of its flow through them, differ also in—

1. The capillaries in the glomeruli are loops collected into a tuft by their covering of delicate epithelium. On account of their relation to the afferent artery, which ends abruptly in these capillaries, and to the smaller efferent vessel that leads to a secondary plexus of capillaries, the pressure within the glomerulus must be very great compared with that of the general capillaries of the body, and must vary much with changes in local blood pressure.

2. The secondary capillary plexus, with its narrow meshwork closely investing the tubules, can only be under comparatively trifling pressure, which varies but little, on account of the blood having first to pass through the capillaries of the glomerulus. Their current of blood must also move slowly, since the bed of the stream is here very great.

3. The straight vessels, with long-meshed capillaries, in the pyramids between the looped and straight tubules, are unlike the two preceding. In these straight vessels the blood probably flows with greater velocity than in those around the convoluted

tubes; and their blood-pressure is less than that in the glomeruli, but greater than that in the intertubular capillaries.

The Urine.

When freshly voided the urine of man in health is a clear, straw-colored fluid, with a peculiar aromatic odor. The intensity of the color varies with the amount of solids which it contains—the color being a rough indication of the degree of concentration. On standing and cooling, a slight cloud of mucus often appears floating in the fluid. This comes from the lining membrane of the bladder, and it usually entangles a few flattened epithelial cells, which are the only organized structural elements found in normal urine.

The fresh urine has a distinctly acid reaction. This does not depend upon the presence of free acid, as is suggested by the fact that no precipitate is found on the addition of sodium hypersulphate, but upon the large amount of acid salts, particularly acid sodium phosphate, which it invariably contains. A strictly vegetable diet renders man's urine alkaline.

The specific gravity of urine varies greatly at different times, commonly, however, ranging between the figures 1015-1020. After drinking a large quantity of liquid it may go as low as 1003, and after prolonged abstinence from liquids, or very active sweating, it may attain 1040.

The quantity of urine secreted is also somewhat variable, that produced by an adult usually amounting to about two pints in the twenty-four hours. The amount is increased by (1) elevation of the general blood-pressure or the pressure in the renal vessels from any cause whatever; (2) contraction of the cutaneous vessels from cold; (3) copious drinking; (4) excess of nitrogenous diet; (5) the presence of soluble matter in the blood, such as sugar, salt, etc.; and (6) the presence of urea, as well as various medicaments, has a special action on the renal secretion, greatly increasing the amount of urine passed.

Although the quantity of urine differs so much under different circumstances, the amount of solids excreted by the kidneys in the twenty-four hours remains very nearly the same, being on an average over one and a half (1½) ounces for an adult man.

From this it is obvious that the height of the specific gravity must vary inversely with the amount secreted, so that the more

scanty the urine the higher we expect to find the percentage of solids.

Secretion of the Urine.

It has just been seen that the arterial twig, or *afferent vessel,* which enters the capsule of Malpighi, breaks up into a set of capillary loops, which are only covered by a single layer of extremely thin epithelial cells separating them from the lumen of the urinary tubule, and that the pressure in the vessels of the glomerulus is habitually higher than in most capillaries, and constantly greater than that of the second capillary network around the convoluted tubules.

The general arrangement of these vessels, and the high pressure in the glomerulus, give the impression that it is simply a filtering apparatus by means of which the fluid parts of the blood pass into the urinary tubules. This view seems supported by the fact that the quantity of urine bears a direct proportion to the blood-pressure in the minute renal vessels, whether the change in pressure depends on local vascular mechanism or on changes in the general blood-pressure.

But such a theory, as has been well pointed out by Prof. Yeo, cannot adequately explain the formation of urine, because the urine differs materially from the fluid which can be obtained as a filtrate from the blood. In health it contains no albumin, a substance in which the blood is very rich, and it has enormously more urea and salts than the blood. There is, therefore, both a quantitative and a qualitative difference, which implies a distinct process of selection, and although filtration cannot be altogether excluded from the process, it must be completely modified by other forces.

Moreover, in the general description of the kidney, we have just seen that, in a great part of the tubules, both the epithelial and vascular supply give the idea of actively secreting gland tubes. From the mere construction of the different portions of the gland it has been concluded that there are two distinct departments, each of which plays a different part in the production of the urine. One is a simple filtering mechanism, and the other a definitely secreting glandular tubule.

It is not surprising that, with such a complex arrangement as the tubules above mentioned, there should exist different views as to the exact mode in which the urine is secreted. For a de-

tailed enumeration of the different explanations of the method of secretion of the urine the reader is referred to any of the standard works on physiology.

Chemical Composition of Urine.

The percentage of the various materials in urine varies as the secretion differs in strength, as mentioned, but on an average it may be said to contain about 4 per cent. of solids and 96 per cent. water.

The following are the more important solid matters:

Urea is the most important, and at the same time most abundant solid constituent, commonly forming about two (2) per cent. of the urine. It is regarded as the chief end-product of the oxidation of the nitrogenous matter in the body, so that the amount excreted in the twenty-four hours gives us the best estimate of the amount of chemical change taking place in the tissues. It is readily soluble in alcohol and water, but insoluble in ether. It forms needle-shaped crystals with a silky lustre.

On exposure to the air bacteria develop in the urine, and, acting as a ferment, change the urea into ammonium carbonate. This gives rise to a change in the reaction of the urine, which after a time becomes increasingly alkaline, and the change is usually spoken of as alkaline fermentation of the urine.

The amount of urea eliminated in the twenty-four hours is about 500 grains. The amount varies (1) in some degree with the amount of urine secreted; an increase in the amount of water being accompanied by a slight increase in the urea eliminated. Some materials, such as common salt, increase the water, and thereby also increase the urea. (2) The character and quantity of the diet influences most remarkably the quantity of urea given off, the amount increasing in direct proportion to the quantity of proteid consumed. Fasting causes a rapid fall in the amount of urea; even in the later days of starvation it continues to fall, but very slowly. (3) The amount differs with age, being relatively greater in childhood than in the adult (about half as much again in proportion to the body weight). (4) Many diseases have a marked influence on the amount of urea. In most febrile affections it increases with the intensity of the fever, while in diseases of the liver it often notably decreases.

In diabetes, if the consumption of food be very great, the daily excretion of urea may reach nearly four ounces, or three times as much as normal.

Uric acid is present only in extremely small quantities in the normal urine. It is sparingly soluble in water, and insoluble in alcohol and ether. In solutions of the neutral phosphates and carbonates of the alkalies it combines with some of the base so as to form acid salts, and at the same time converts the neutral into acid phosphates, to which the urine owes its acid reaction. These salts are more soluble in warm than in cold water, and hence generally fall as a sediment when the urine cools.

The amount of uric acid normally follows very closely the variations in urea, but is usually only about eight grains in the twenty-four hours. In certain diseases the quantity may be much increased.

Kreatinin is always present in urine, probably being formed from kreatin by the loss of one molecule of water. About fifteen grains is the amount excreted in the twenty-four hours.

Hippuric acid is a normal constituent of human urine, occurring, however, in very small quantities. The amount of hippuric acid increases with increased consumption of vegetable food, in the cellulose of which the materials exist that are required for its formation.

Xanthin also occurs in urine, but in extremely small quantities.

Oxalic acid occurs often, but not constantly, in the urine. It is generally united with lime. It is said to appear in greater quantity, together with an excess of uric acid, after meals, and therefore to be related to the production of the latter in the body; but it is probably derived from oxalates being contained in some material taken with the food.

Coloring Matters.

It appears probable that the color of the urine depends on the presence of small quantities of distinct substances which have different origins in the body. Three such have been described, and may be taken provisionally to represent our knowledge of the subject.

1. *Urobilin,* which is an outcome of the coloring matter of the bile, and therefore a remote derivative of the coloring matter

of the blood, is frequently present in the urine. It is probably the same as hydrobilirubin, some of which is occasionally absorbed from the intestinal tract and eliminated by the kidneys.

2. *Urochrome* is said to be the special pigment of the urine. It oxidizes on exposure, forming a reddish substance that gives the dark color to some urinary sediments (*uroerythrin*).

3. A certain material (*indican*) capable of producing indigo, is commonly present in the urine of man, and in greater quantity in that of some animals, particularly the horse. It is supposed to be formed from the indol that arises from the putrefactive changes consequent on the pancreatic digestion. The indol is absorbed and unites with sulphuric acid to form indican, which is a yellow substance. Under certain conditions it can be converted by oxidation into indigo blue.

Inorganic Salts.

The urine is the great outlet for all inorganic salts. The most important of these are:

Common salt, of which a very variable, but always considerable amount passes away in the urine. The average quantity excreted in the twenty-four hours may be said to be about half an ounce. It depends greatly on the quantity taken with the food, and falls during starvation, but does not completely disappear. It is said that if absolutely no sodium chloride be taken with the food the quantity excreted diminishes greatly, and that albumin appears in the urine about the third day. The amount of salt eliminated follows, with striking accuracy, the changes that take place at different times and under different circumstances, in the quantity of urea excreted. These facts seem to indicate that there is some relationship between the secretion of the two bodies, or that sodium chloride participates in the chemical changes of the nitrogenous tissues. In many diseases there occur variations in the quantity of common salt in the urine, which can hardly be explained by the change in or absence of food.

Phosphates.—About sixty grains of phosphoric acid is excreted daily in the urine, being combined with alkalies to form salts, namely: potassium, sodium, calcium and magnesium phosphates.

Sulphates.—Nearly forty grains of sulphuric acid, as sul-

phates of alkalies, are daily excreted in the urine. The acid comes partly from the food, but chiefly from the oxidation of the sulphur contained in the proteids of the tissues.

A considerable quantity of potassium, sodium, calcium and magnesium, combined as heretofore mentioned, or with chlorine, is contained in the urine.

Iron.—Small traces of iron are also always present in the urine.

Gases.—The urine also contains free carbonic acid gas (carbon dioxide), nitrogen and some oxygen.

Abnormal Substances in the Urine.

Different kinds of substances occur in urine under circumstances of interest. The most important of these is:

Albumin, which occurs from (1) any great increase in the blood pressure in the renal vessels, whether caused by increased inflow or impeded outflow. (2) Excess of albumin in the blood, and, strange to say, some forms of albumin escape much more readily than others. Thus, egg albumen, globulin or peptone, if introduced artificially into the blood, is soon found in the urine. (3) A watery condition of the blood, such as would give rise to edema elsewhere. (4) Total absence from NaCl for some time. (5) Extensive destruction of the epithelium of the urinary tubes.

Next in importance to albumin are the following:

Grape sugar, of which normally only the merest trace occurs in the urine, although there is always a certain quantity in the blood. It is present in large quantities in (1) the disease known as diabetes, when a great quantity of pale urine with a very high specific gravity is passed. (2) After injury of a certain part of the floor of the fourth ventricle of the brain. (3) After poisoning by curara, carbonic oxide and nitrite of amyl. In short, any disturbance of the circulation of the liver gives rise to an increase of sugar in the blood, and when the amount reaches 6 per cent. it appears in the urine.

Bile acids and *pigments* appear in the urine when, from occlusion of the bile ducts, they find their way into the blood.

Leucin and *tyrosin* also occur in the urine, but only after profound interference with the function of the liver.

The urine undergoes important changes after being voided,

the explanation of which is of much interest to the practitioner, and must be understood by the student of medicine. (1) Commonly enough the urine loses its transparency as soon as it gets cold, though perfectly clear when passed, or when again heated to the body temperature, for the urates are soluble in warm but almost insoluble in cold water. This "muddiness," which soon settles down, as a more or less brightly colored sediment, is chiefly caused by the precipitation of acid sodium urate, stained with a coloring matter derived from the urochrome. When this occurs the urine will always be found to be distinctly acid, and if it be left standing for some time in a cool place, the acidity will be found to increase, owing to the presence of a peculiar fungus which sets up *acid fermentation*. This is said to depend on the formation of lactic and acetic acids, and crystals of uric acid, amorphous sodium urate, and crystals of lime oxalate are deposited.

After a certain time (which is shorter when the urine is not very acid and is exposed to a warm atmosphere) the development of bacteria occurs in it, and causes the urea to unite with water, and to change into ammonium carbonate. This gradually neutralizes the acidity, and finally renders the urine alkaline. At the same time an amorphous precipitate of lime phosphate appears, and crystals of ammonio-magnesium phosphate and of ammonium urate are produced.

Urinary Calculi.

Various ingredients of the urine, which are difficult of solution, sometimes become massed together as concretions, particularly if there exist any small foreign body in the bladder which by acting as a nucleus lays the foundation of a stone. Sometimes small concretions are formed in the tubes or pelvic recesses of the kidney, and, when these make their way into the bladder, they commonly grow larger and larger. The structure and composition of a calculus often give the history of its own transit from the kidney, and also of various changes in the metabolism of the individual, for successive layers of different substances are generally found in a stone that has attained any great size. The chief materials found in calculi are:-Uric acid, ammonium urate, calcium oxalate and carbonate, ammonio-magnesium phosphate, etc.

Nervous Mechanism of the Urinary Secretion.

With regard to the influence exerted by the nervous system on the renal secretion, we have but little satisfactory information, although there can be no doubt that here, as in other glands, the process is under the control of the nerves. Many of the circumstances which cause greater activity of secretion, such as taking large quantities of water, etc., have no effect on the general blood pressure, so that, if the increased flow be brought about by the vasomotor mechanisms, it must be by means of nervous channels altering the blood-flow in the special arteries of the glands. We know, further, that emotional conditions, such as hysteria, exist in which an unaccountably great quantity of urine of a very low specific gravity is evacuated.

With regard to the effects of the vasomotor nerves, we know that section of all the nervous twigs going to the kidneys causes great congestion and an immense increase in the secretion, which commonly contains albumin. This, no doubt, depends on the sudden rise in pressure in the glomeruli, owing to the dilatation of the arterioles. If the splanchnics, in which the renal vasomotor nerves run, be cut, a great quantity of urine is produced from the same cause—vasomotor paralysis—but, on account of the large area of vessels injured, the general blood pressure falls, and, therefore, the effect is not so much marked. If the peripheral end of the cut nerves be stimulated, the secretion is diminished, and, owing to spasm of the renal arterioles and fall of blood pressure in the glomerular capillaries, may be brought to a standstill. Section of the spinal cord at the seventh cervical vertebra stops the flow, because it so reduces the general blood pressure that the pressure in the renal vessels falls below that necessary for the filtration of the urine.

Passage of the Urine to the Bladder.

The pressure exerted by the blood in the glomerular capillaries is quite sufficient to make the urine flow from the pelvis of the kidneys into the bladder. Normally, however, the passage of the urine along the ureters is accomplished by the peristaltic motion of the ducts, which goes on alternately in the two ureters, so that the urine flows into the bladder at different periods from the right and left kidney.

The ureters have a strong middle coat of smooth muscle along which a wave of contraction, lasting about one-third of a second, passes rhythmically in about six to ten seconds from the pelvis of the kidney to the bladder.

Having reached the bladder, the urine cannot return into the ureters on account of the oblique way in which these ducts pass through the walls of the bladder. When the pressure in the bladder increases, the opening of the ducts becomes closed and acts as a kind of valve.

The urine, which is continuously secreted and rhythmically conveyed to the bladder, is only voided at convenient seasons; therefore special arrangements exist for its retention and expulsion.

The retention of urine in the bladder up to a certain point depends on the elasticity of the parts concerned, the dense elastic tissues around its outlet being able to resist the elastic force exerted by the viscera and the walls of the bladder upon its contents. Thus, where no active muscular forces can possibly come into play, as in the case of a dead subject, or in complete paralysis following destruction of the spinal cord, a considerable amount of urine is retained. But when a certain pressure is attained by the gradual accumulation of urine within the bladder, the elasticity of the sphincter and the other tissues around the outlet is overcome by the elasticity of the bladder wall, and the urine slowly dribbles away.

In the normal condition there are two sets of muscular mechanisms which aid the elastic forces just named.

They may be regarded as antagonistic—the one, the sphincter muscle, by contracting, strengthens the elastic power of the tissues around the urethra, which retains the urine; the other, formed by the muscle coat of the bladder, called the *detrusor urinae,* is the chief agent in actively expelling the urine. When these muscles are in good working order much more urine can be conveniently retained than the elasticity of the tissues about the urethra would permit of. If the spinal cord be destroyed the bladder can only retain about one-third the quantity of urine it conveniently holds when the cord is intact. We must, then, suppose that the sphincter muscle acts more powerfully when the elastic forces are equalized. The accumulation of urine after a certain time gives the sensation known as a full bladder, but

this feeling is not necessarily accompanied by any immediate call to make water, though it sometimes produces a desire in that direction. We suppose, then, that the stimulus given to sensory nerves by filling the bladder causes reflexly a constriction of the sphincter muscle, so that in proportion as the pressure within the bladder increases the resistance to its outflow is also augmented. This does not imply any automatic action of the sphincter vesicæ, but merely a constant reflex excitation of that muscle, which secures its contraction and the retention of a considerable amount of urine without the intervention of voluntary influences or attention.

Micturition, or the expulsion of the urine, does not normally ever depend on elastic forces alone, as in the case of paralytic incontinence, when the urine commences to dribble away as soon as a certain pressure is attained within the bladder.

When the bladder is full, the elastic forces tending to expel its contents increase, and the resistance is proportionately augmented. Under ordinary circumstances, then, there is a combat going on between the expelling and retaining powers (neither the muscle in the wall of the bladder nor voluntary effort, however, coming into action), in which the retaining forces are just able to overcome the expelling elastic pressure. If the urine is retained for a considerable time, a moment arrives when the reflex stimulation of the spincter no longer suffices to keep back the fluid, and the voluntary contraction of the neighboring muscles has to be called to the aid of the sphincter. Under these circumstances, if a drop of urine makes its way into the sensitive urethra, matters are greatly altered. Now, even voluntary effort does not suffice to keep back the stream, and an imperative call is made upon the local mechanisms to empty the bladder. This is accomplished by the contraction of the muscular coat of the bladder, which is excited reflexly by the stimulus starting from the mucous membrane lining the urethra. The evacuation of the bladder is then accomplished quite independently of the will by a reflex act, which may even be unconscious.

When the urine once commences to flow, it continues until the bladder is quite empty, the last drops of urine being expelled from the urethra by rhythmical spasms of the muscles around the bulbous portion of that canal. The sequence of

events will then be—stimulation of the mucous membrane of the urethra by escape of urine; contraction of the detrusor urinæ; relaxation of the sphincter; rhythmical contraction of the ejaculator urinæ; and, finally, a voluntary twitch of the levator ani and neighboring muscles.

This sequence of events may go on in sleep, as a result of slight local excitations, frequently in children, when probably the retention mechanisms are not yet well educated.

At an early age we learn, under ordinary favorable circumstances, to micturate voluntarily, and the bladder is never allowed to become so over-distended that the reflex contraction of the sphincter is insufficient to retain the urine. Almost at any time we can call forth the reflex act just described by increasing the pressure on the bladder by voluntary contraction of the abdominal muscles; the diaphragm being depressed and fixed, the muscles of expiration are put into action, and the contraction of the sphincter muscle being at the same time probably checked by the will, the power of retention is overcome.

The moment the balance of power is thus turned in favor of the expelling agencies and a drop of urine reaches the urethra, the excitation thus produced brings about the complete evacuation of the bladder without further voluntary effort.

The nervous mechanism that controls the act of micturition consists essentially of ganglionic centres which are situated in the lumbar enlargement of the spinal cord, and of two sets of nerve channels passing to and from the center. The centers may be said to be composed of functionally distinct parts—a *retaining* and *evacuating part*. The retaining center causes the sphincter muscle to contract. The evacuating center can excite the detrusor to action while the sphincter is relaxed by the inhibition of its exciting center. One set of nerve channels communicates between these centers and the urinary organs, and the other between the cord centers and the cerebral hemispheres. That which connects the special lumbar centers with the bladder contains motor (efferent) fibers of two kinds, going to the antagonistic muscles, the sphincter vesicæ and the detrusor urinæ, respectively, and the sensory (afferent) fibers of different kinds; those going from the bladder to the nerve cells in the cord which stimulate them and cause the sphincter to remain tonically contracted, and passing from the mucous membrane of the urinary passages

to these ganglionic cells in the cord are two sets, one of which excites the contractions of the detrusor urinæ and the other inhibits the tonic action of the retaining center.

The action of the ganglionic cells that stimulate the sphincter muscle can, to a certain extent, be either aided or checked by means of cerebral influences, so that two kinds of fibers—a stimulating and an inhibitory one—must pass from the hemispheres to the micturating center in the cord.

Those cells which govern the motions of the detrusor seem to be least under voluntary control, and are probably only stimulated to action under normal circumstances by the impulses arising from the urinary passages, and hence are simply reflex centers.

The effect of certain emotions on the act of micturition seems to show that those ganglion cells in the cord which cause the bladder to contract are connected with the higher centers. Thus, extreme terror (in a dog, at least) often causes a forcible expulsion of urine, and great anxiety or impatience seems in man often to have a checking influence, causing great delay in initiating micturition.

Pathology of Urine.

As has been previously stated, the quantity of urine normally excreted in the twenty-four hours by an adult is from twenty to fifty ounces, but it may exceed this average as a result of the ingestion of large quantities of fluids, as in the case of beer drinkers. It may also exceed the quantity named in winter, especially in individuals of sedentary habits. It is pathologically increased in diabetes and in hysteria. It may be below the average in summer, and generally under all conditions by which the amount of perspiration and pulmonary exhalation is increased. It is pathologically diminished in acute febrile diseases, and in all diseases attended by dropsical effusions or watery discharges. Urine voided in the morning is darker than that passed at other times. The use of certain drugs imparts a peculiar color to the urine, as, for instance, rhubarb makes it a bright yellow, logwood reddish, senna brownish, and santonin orange-red or golden yellow. The pigment known as methylene blue gives the urine a peculiar blue color. It is well to mention these facts to the patient when prescribing either of the remedies named. Pathologically, the urine is rendered pale in anemia, and in those con-

ditions which produce an increase in the quantity, and it is similarly heightened in color under those conditions in which the quantity of water eliminated by the kidneys is diminished while the elimination of the solids remains normal or is increased. The presence of bile may render the urine brown, or even black.

While the specific gravity of the urine of females is usually slightly lower than in males, during pregnancy it may normally rise to 1030.

After a full meal the specific gravity of healthy urine may rise to 1030.

It may be well to here point out the gradations of the specific gravities of the urine under different circumstances. They are as follows: Hysterical urine, 1005-1015; albuminous urine, 1005-1015; saccharine urine, 1025-1050; healthy urine, 1015-1025.

The acid reaction of human urine is owing to the blending of animal with vegetable food. It may become alkaline by exposure to air after some days, its urea being converted into carbonate of ammonia; or it may be rendered alkaline by remedies, such as carbonate of lime or magnesia, or its acid condition may be lessened by constant vomiting in certain diseased states of the stomach, or when the urine is loaded with pus. It may also become alkaline after a full meal, the digestion of food absorbing the gastric juice.

Urea in excess often gives urine a specific gravity of 1030 to 1035. Urea is theoretically formed by the oxidation of uric acid, so when this oxidation does not take place, and there is an excess of uric acid in the system, as occurs in gout, this disease is esteemed one of suboxidation.

This substance may be detected by adding strong nitric or oxalic acid to the urine. If kept cool, nitrate or oxalate of urea crystals are formed. The former of these appear in the form of scales, which are composed of numerous rhomboidal plates; the latter also take the form of rhomboidal plates, but the angles are much less acute.

Abnormal Urinary Deposits and Their Examination.

The abnormal urinary deposits are urates or lithates, uric acid, oxalates, phosphates, cystin, leucin, tryosin, pus and mucus.

Urates or Lithates.—These substances usually consist of urate of sodium and ammonia, and are the most common urinary sedi-

ments, being occasionally passed by almost everybody. They are found in the course of most fevers, in liver diseases, in rheumatism, and in gastric disturbances, but they do not indicate anything serious. There are two varieties—the pink and the white. The pink lithate forms the so-called brickdust sediment, and is best treated by remedies which improve digestion, but the white variety indicates the need of tonics.

The lithate of ammonia is soluble in liquor potassæ, with evolution of ammonia. All lithates are dissolved by heat and thrown down by cold. Microscopically, lithate of ammonia appears in feathery, amorphous bodies. The lithate of sodium sometimes forms spherical masses, from parts of which very small needle-shaped crystals of uric acid project. The lithate of sodium is commonly met with in children.

Uric or Lithic Acid.—An excess of uric or lithic acid constitutes the uric acid diathesis, the leading characters of which are gout, gravel and dyspepsia, and the urine is always decidedly acid, whilst in health it gives only a faint acid reaction. Uric acid may occur as a deposit, which is often called the cayenne-pepper grain deposit (gravel), or as a concretion (calculus). The red color of the grains is acquired from the coloring matter of the urine. The real appearance of uric acid is white.

Uric acid is dissolved (without evolution of ammonia) by liquor potassæ and liquor lithiæ, but not by liquor sodæ or liquor ammoniæ. Uric acid is insoluble in water, but is supposed to be held in solution in the urine by the action of the phosphates. Microscopically, uric acid usually appears as a rhombus with rounded edges, or as a dumb-bell with fringed edges, always with a yellowish or reddish color, but some crystals are at times needle-shaped.

Oxalate of Lime.—The prescence of the oxalate of lime in the urine constitutes oxaluria. This salt is not found in healthy urine, but its elements, carbon, oxygen and calcium, are present. and give rise to the mulberry calculus. Oxaluria often does not indicate anything serious, but is usually associated with dyspepsia and gastric disturbances. It is not unfrequent to find, upon the same microscopic specimen, crystals of oxalate of lime lying side by side with those of uric acid.

Oxalates are dissolved by nitric acid, but not by acetic acid or by liquor potassæ. Microscopically, oxalates present a white de-

posit, consisting of square octahedra and dumb-bells without fringed extremities.

Phosphates.—The phosphates form a white deposit, and occur in the urine under three forms, namely: (*a*) The triple or tribasic phosphate, or ammonio-magnesium phosphate, appearing under the microscope in the form of triangular prisms with obliquely truncated ends. Frequently the crystals are four-sided, and sometimes peculiar forms are observed in which two prisms appear united. (*b*) The basic, bibasic, or triple phosphate with excess of ammonia, microscopically presenting stellate crystals, and therefore sometimes called the star-shaped phosphate; they after a time assume the prismatic form. (*c*) The phosphate of lime, occurring as rounded particles, usually clinging to the angles of the triple phosphate.

Upon adding a few drops of ammonia to healthy urine it becomes turbid, and deposits the triple salt with phosphate of lime.

Phosphaturia is the name applied to the condition in which the urine contains a considerable excess of phosphates. The presence of a small deposit of phosphates in the urine is always an indication of depression and debility, but a large quantity always shows a waste of tissue, and may be considered as caused by a breaking up of the mind and body.

The phosphates are precipitated by heat or liquor potassæ. They are thus distinguished from the white lithates. They are soluble in acetic and nitric acids, and are thus distinguished from oxalates, which, although soluble in nitric acid, are *not* dissolved by acetic acid.

Cystin or Cystic Acid.—This subtance is an organic compound of a fawn color, containing carbon, hydrogen and nitrogen, with a large and equal quantity of sulphur and oxygen (26 per cent. of each). It is probably a derivative of albumin, and constitutes a form of urinary calculus, but very rarely occurs as a deposit. The urine containing it usually possessses an odor of sweetbriar. Cystin is often mixed with uric acid and the urates.

Cystin is soluble in liquor ammoniæ, but is re-precipitated unchanged upon the spontaneous evaporation of the ammoniacal solution. Microscopically, the deposit exhibits six-sided colorless plates, which, if very abundant, are aggregated together so as to form superimposed plates.

Leucin and Tyrosin.—These are very rare substances, but

are found in the urine in cases of acute yellow atrophy of the liver. Microscopicallly, leucin occurs in gland-like masses of leaves or scales, and tyrosin appears as shining, long needles clustered together.

Pus.—This substance occurs as a white deposit, and is a frequent indication of chronic pyelitis, especially when mixed with blood.

Pus forms a glairy mass with liquor potassæ. Microscopically, the pus corpuscles resemble the white globules of the blood, but are somewhat rougher in outline, and contain more nuclei. Some recent authorities regard them as identical.

Mucus.—This deposit also forms a glairy mass with liquor potassæ, but, microscopically, the epithelial cells are easily observed. If the mucus is from the bladder, the epithelial cells are flat and scaly, but if from the urethra they are columnar. In perfectly healthy urine a slight cloudy deposit of mucus is often present.

Abnormal Urinary Constituents and Their Examination.

The abnormal constituents found in the urine are (1) blood, (2) bile, (3) albumin, and (4) sugar.

Blood.—The presence of blood in the urine is termed hematuria. Congestion of the kidneys or any part of the urinary organs, either idiopathic, or produced by cantharides, turpentine and similar substances, may cause this condition. The most frequent cause, however, is a calculus. A diseased prostate, inflammation of the bladder, or tumors in the mucous membrane, may also cause the presence of blood in the urine. Again, hematuria may occur in the course of purpura, scarlet fever and typhus fever, or it may be vicarious of menstruation. In the hemorrhagic diathesis large quantities of blood may be discharged by the urethra of the male or the female. When the blood proceeds from the bladder it generally follows a flow of urine. but when from the kidney it is intimately mixed with the urine.

The tests for blood consist of (1) its coagulability by heat and nitric acid, which cause it to throw down a dirty-brown coagulum; (2) its color, and the heightening of it by liquor ammoniæ, a crimson tint being produced; (3) the corpuscles under the microscope; (4) the dark bands in the spectrum; and

(5) the *blue* color produced with blood by fresh tincture of guaiacum and ozonized ether (the peroxide of hydrogen test).

Bile.—This substance gives to the urine a dark brown color, varying in the depth of its shade according to the amount of bile present. Bile may be present in the urine from one of two conditions, namely: (1) Suppression of the biliary functions, in which case the blood is charged with the coloring matter of the bile and with cholesterine; (2) obstruction to the flow of bile into the duodenum, in which case the matters generated in the liver itself (bile acids) appear in the urine. The tests for bile are as follows:

1. A few drops of nitric acid added to the bile-stained urine, upon a white porcelain plate, produces an irridescent play of colors.

2. If one-half drachm of strong sulphuric acid, with a small fragment of loaf sugar, is added to about two drachms of bile-stained urine, suppression will be indicated by a mere browning of the sugar, whereas obstruction will be shown by a scarlet or purple color at the junction of the two fluids, due to the bile acids becoming oxidized.

Albumin.—The presence of albumin in the urine constitutes albuminuria. The most frequent causes of this condition are cold, scarlatina, intemperance, diphtheria, pulmonary tuberculosis, articular rheumatism, typhoid fever, erysipelas, measles and pregnancy.

Albumin in the urine is a prominent diagnostic feature in Bright's disease, but there is much more to the disease described by Richard Bright, in 1827, than is indicated by the fact that albumin is found in the urine. As has been pointed out by Dr. A. B. Conklin, pathology reveals different types of nephritis, as the glomeruli or stroma are involved, while the functional and structural changes following may, in the early stages, be diametrically opposite.

"A single type of nephritis is not characteristic of so-called Bright's disease, nor does the nephritis of whatever type constitute the entire morbid process. The term Bright's disease, though palpably inadequate as heretofore applied, no longer expresses our conception of certain correlated processes, may still be used, by sufferance at least, for want of a more acceptable term, to cover the more than incidental association of nephritis

with well-defined cardio-vascular changes and resultant cerebral lesions.

"While such changes as come to the heart and arteries are more commonly observed in the chronic than in the acute types of nephritis, the fact should not be lost sight of that it is only the structural changes occurring in these organs that, as a rule, are looked for, and these are the outgrowth of time, which acute cases do not permit. There is, however, in the acute cases the same element of increased blood pressure which marks the beginning of the primarily chronic cases and leads to the later structural changes with both the arteries and the heart.

"The cardiac symptoms found in Bright's disease are hypertrophy, with accentuation of the aortic second sound, displacement of the apex impulse to the left, and later, dilatation with broken compensation, mitral systolic murmur from relative insufficiency, dyspnea, palpitation, gallop rhythm, dropsy and endo- or pericarditis, or both.

"The structural changes in the vessels are fibrosis, arteriosclerosis, atheroma, aneurism, thrombosis, embolism, miliary aneurism, especially in the brain, degeneration of the coronary arteries with myocarditis, degeneration of the cerebral arteries with apoplexy, pulsation in the head, ringing in the ears, amaurosis or amblyopia from retinitis, with or without hemorrhage, epistaxis and hematemesis.

"These various forms of arterial degeneration are the logical sequence of long-continued high blood pressure, the pathognomonic sign of which is a short, sharp accentuated click upon closure of the aortic valve. The same factor of increased peripheral resistance throws more work upon the heart, the recognized result of which is compensatory hypertrophy.

"It being a well-recognized fact that chronic Bright's disease, in its varied types, acute and chronic, may exist, unrecognized by its nephritic symptoms, and since it is curable only in the stage of functional albuminuria, the importance of its early recognition is apparent." (*Conklin*).

The treatment of the conditions known as Bright's disease suggested by Dr. Conklin is in part as follows:

"The one cardinal etiological factor, and constant symptom in the beginning of all cases, is high blood pressure. This I have attempted to show is, in a large majority of cases, of aortic origin. The improved treatment for toxemia is by elimination. The good we are able to do our patient in incipient Bright's disease is to institute a manner of living, including eating and drinking, that is conducive to a minimum formation of nitrogenous waste products within the body, and by judiciously applied exercise, baths, increased intake of fluids to flush the emunctories, and by

suitable medication assist in the elimination of the toxic products already circulating in the blood.

"When we have done this we have removed the main cause of chronic Bright's disease. The cause being removed, the further possibilities of medication are limited to the relief of such results of this cause as still remain. Elimination should be supplemented by the use of suitable vasodilators. Amyl nitrite and nitro-glycerine are too fleeting in effect to be of the highest service except in a threatening emergency. Nitrite of sodium, veratrum viride, theobromine or diuretin are much to be preferred for continuous use in chronic cases. When a cardiac tonic is required in the advanced stages, caffeine or strophanthus are much to be preferred to the conventional use of digitalis, which should be relegated to its proper sphere, which is, as in hypertrophy without nephritis, the late stage of broken compensation. Uremic poisoning, however manifested, is to be met by the most prompt and vigorous elimination.

"The toxins accountable for high blood pressure are such as are normally eliminated by the kidneys, and a greater measure of success will attend our efforts to promote their elimination through these natural channels. The alkaline eliminants, sodium, potassium and lithium salts, are accepted as our best renal eliminants.

"Caffeine insures free diuresis without irritating the kidney as the more stimulating diuretics do, and without contracting the arterioles as does digitalis.

"The strenuous life should give way to one of moderation, and the diet should consist largely of fruits, vegetables and cereals, including milk and eggs. Have no fear that the patient cannot be properly nourished on a meat-free diet. There is more to be feared from meat poisoning than from lack of nutrition."

In making an examination of the urine the reaction and specific gravity must be ascertained. The reaction is determined by the use of litmus paper, which comes in two colors, red and blue. This paper is also known as test paper. In applying the test, we take a strip of the red paper and dip one end of it into the urine. The moistened paper will be colored *blue* if the urine is *alkaline* in reaction. If no change is noticed in the color of the dampened paper, we use a strip of blue in the same manner, and if the urine is *acid,* the dampened part will be changed to *red,* If no change in color is effected in either instance, the urine is *neutral.*

If possible the urine should be examined soon after it is voided, before decomposition sets in. The specimen of urine submitted for examination should preferably be taken from the

whole amount passed in the twenty-four hours, collected in a vessel perfectly clean. Urine may be alkaline when first voided, and it is important that it be ascertained whether the alkalinity is due to the presence of a fixed alkali or to a volatile alkali. This may be determined as follows: The litmus paper that has been turned to blue by the urine is exposed to the air until it becomes dry. If the blue color then remains the change was due to a fixed alkali; if not, to a volatile alkali. The former reaction is of no special significance (it may be due to an alkaline remedy which is being taken), while the latter nearly always indicates cystic trouble.

"In testing for albumin in the urine the following procedure is sure to secure a clean test tube and a clear specimen of urine: Take an ordinary cotton tampon on a string, such as is used in gynecological work, push it to the bottom of the test-tube with a stick or glass rod, and pack it firmly. Then pour the urine into the test-tube and pull out the tampon very slowly by the string. This, on account of the atmospheric pressure, causes the urine to pass through the tampon and remain in the tube. The tampon carries out with it any particles that can be removed by filtration, and at the same time cleans the inside of the test-tube. If there are several specimens to be filtered, the tampon can be rinsed under the faucet, or otherwise, and used over again. By this method test-tubes can always be kept clean and bright inside, and there is none of the delay occasioned in using filter paper. The process can be repeated quickly two or three times if the first filtration is not satisfactory. In detecting very small traces of albumin, a perfectly clean test-tube is of great importance." (*Bishop.*)

The following has received the approval of many experienced physicians:

"The urine should *always* be filtered through a high grade of filter paper, and through several thicknesses if necessary, before applying any of the tests for albumin. To some this may seem a trivial matter, but I consider it one of the most important steps in conducting a careful and reliable albumin test. All urines contain suspended matter, sometimes in large but often in small amounts, which must be removed in order to detect small traces of albumin.

"The urine should not be filtered through French chalk (talc), Fuller's earth, bismuth subnitrate, magnesium carbonate, char-

coal, or other inert substances. We are indebted to Dr. Brandreth Symonds for his investigation of the filtration of urine through French chalk. He found that albumin was removed from the urine by this substance. A good filter paper will clarify all urines except those containing chyle and many bacteria. A specimen containing bacteria can be clarified by precipitating the earthy phosphates with ammonium hydroxide and filtering; the precipitate of phosphates carries with it the bacteria. The urine thus treated is, after filtration, rendered faintly acid with 10 per cent. nitric acid, and it is then ready for the albumin tests. A urine containing chyle can be clarified only by shaking with ether." (*Ogden.*)

The specific gravity of urine is ascertained by means of the urinometer. In using this instrument for the purpose of determining the specific gravity of the urine there is a series of details which, if not carefully adhered to, may be the means of serious error.

In the first place, make sure that your float and cylinder are properly made—a poor apparatus is worse than useless. The float may be tested by placing it in distilled water at a temperature stated on the float—if it does not state this, throw it away and secure one that does. If it is properly made, it will float at 1,000 under these conditions.

The cylinder should not be too small in diameter, else the float will impinge on its sides and thereby cause it to become fixed at a point either above or below the correct reading. An excellent cylinder is one with flutings in its sides which present nothing more than points to the float. A urinometer constructed on proper principles is made by Squibb. This may be obtained with or without a thermometer. This last article is a necessary adjunct when it is understood that the specific gravity of a fluid varies with its temperature, one degree of specific gravity for every seven degrees of temperature. At higher temperatures the fluid is greater in bulk, and therefore the float will sink lower; or at colder temperatures it is smaller in bulk and the float rises. For example, should the float be intended to read at 67° F. and the urine tested is at 88° F. the reading would vary three degrees too low, and therefore three degrees should be added. The rule is to add one degree specific gravity for every seven degrees of temperature, when the temperature exceeds that stated on the float, and to subtract one degree specific gravity for every seven

degrees below. It is perhaps unnecessary to add that the float should be kept perfectly clean.

Finally determine whether the float is intended to be read from the top or the bottom of the meniscus. They vary in this respect, but are usually intended to be read from the top. In either event there is usually a variation of two degrees in the readings from the top and the bottom.

The following are among the most reliable tests for albumin in the urine:

1. Heat and nitric acid will independently coagulate or throw down albumin, but these reagents should be added together, since either, separately, may give a fallacious result. Phosphates, when in excess, are thrown down by heat, but dissolved by nitric acid, and nitric acid may cause a turbidity in urine containing an essential oil, as copaiba or cubebs. This oil may be separated by ether, and the urine will then have its usual reaction.

2. Place some urine in a test-tube, incline it gently, and allow a little nitric acid to trickle to the bottom slowly. Three strata will appear if the fluid is albuminous: at the bottom, colorless nitric acid; above this, coagulated albumin; at the top, unaltered urine.

3. Some nitric acid may be placed at the bottom of a test-tube, and the urine dropped on the top; at the line of junction of the fluids a white line of albumin will appear.

4. Picric acid in powder precipitates albumin, a reaction not interfered with by the presence of phosphates or urates. The test is so very delicate that it will detect a minute trace of albumin, unrecognizable by the nitric acid or heat method.

It should be remembered that if the urine is alkaline, heat will not affect the albumin until a drop or two of acetic acid is added; or the presence of a drop or two of nitric acid in the tube may redissolve the albumin upon the subsequent addition of nitric acid.

5. Boiling is a reliable test for albumin. Fill a test-tube about one-third full of urine; if neutral or alkaline, add one or two drops of acetic or nitric acid. Hold the tube slanting, that the heat may strike the upper portion of the urine, and bring it to a boiling point. If albumin or the phosphates be present, the upper portion becomes turbid, which is clearly shown against the clear urine in the bottom of the tube. Then add a few drops of

nitric acid, which will thicken the turbidity if albumin be present, and clear it if it be absent.

For quantitative estimation of albumin nothing is more satisfactory for the practitioner than Esbach's albuminometer. This is a specially constructed test-tube, with graduations marked on its side ranging from 1 to 7, and above these are two lines, one midway marked U and another near the top, marked R. The reagent is known as Esbach's fluid, the formula for which is as follows:

Picric acid	10 grammes
Citric acid	20 grammes
Water	1000 c.c.

To apply the test, fill the tube with filtered urine to the line marked U and then with the solution to the line marked R. Close the tube with a rubber stopper, and after thoroughly mixing the contents, place it aside to stand for twenty-four hours, at the end of which time note is made of the level to which the precipitate rises. If to the line 1, it indicates one part of the albumin per 1,000 by weight or 1 gramme to the litre; if to the line 2, two parts per 1,000, and so on, up to seven, but if five parts or more are indicated, the test should be repeated, using urine diluted one-half with water and then multiplying the result by two.

Sugar.—When sugar is found in the urine the condition is known as diabetes mellitus, or glycosuria, since glucose or grape-sugar is the variety present in the urine. In diabetes mellitus the first symptom to attract attention is an almost constant desire to pass urine. A much larger quantity of urine than normally is passed daily—the normal quantity being from thirty to fifty ounces; in some cases there may be as many pints as there are usually ounces. The specific gravity of the urine in this condition may be from 1025 to 1050.

The following are among the most approved tests for diabetic urine:

1. Fehling's test contains sulphate of copper (90½ grains), neutral tartrate of potassium (364 grains), solution of sodium hydroxide (4 ounces), water being added to make up exactly six ounces. One grain of sugar exactly decomposes 200 grains of this solution. This original formula has been found to be too concentrated to obtain a delicate reaction. A less concentrated solution is, therefore, generally employed. It is divided into two

parts, A and B, and is kept in separate bottles, and in a dark place. Equal parts of the two solutions produce diluted Fehling's solution.

Place equal parts of the two solutions, A and B, about one finger breadth of each, in a test tube and boil. If the Fehling's solution remains clear on boiling, then add twenty to thirty drops of the suspected urine which is free from albumin. Do not boil after the addition of the urine. If much sugar is present, a yellow or red precipitate of suboxide of copper readily appears. In case the quantity of sugar in the urine is less than 1 per cent., the reduction will not appear until after several minutes, five to thirty. If a reduction does not take place in thirty minutes it is advisable to let the test stand for from eighteen to twenty-four hours, since traces of sugar show evidence of a reduction of the copper only after several hours, when a small amount of the suboxide will be found in the bottom of the test-tube. Less time is required for the test if the urine is gently heated previously to its being added to the boiling Fehling's solution. The non-appearance of a sub-oxide precipitate shows that the urine is free from all sugar. Fehling's test, employed in this way, is one of the most delicate and reliable of tests.

2. Trommer's test is employed as follows: To a drachm of urine in a test-tube add a few drops of a dilute sulphate of copper solution, and then add one drachm of liquor potassæ; bring this to the boiling point, and, if sugar be present, the copper is reduced, forming the yellow or orange-red suboxide.

Urinary Calculi and Concretions.

Urinary concretions, when small and numerous, and which pass readily with the urine, constitute sand or gravel. When, however, they are too large to be evacuated by the urine, they constitute calculi. The chief chemical constitutents of urinary calculi are the following: Uric acid and urates, cystin, oxalate of lime, carbonate of lime, phosphate and protein compounds.

With the foregoing are mixed very small quantities of earthy matters (silica, aluminum, etc.). Sometimes the urinary concretion consists entirely of one of these substances; at others, it is composed of several of them, and not unfrequently the concretion is formed of separate layers of the different constituents.

In testing a sandy deposit, it should first be examined micro-

scopically, then the particles should be cleared of impurities, as pus and blood, and washed with distilled water; large particles should be reduced to powder. In testing calculi, their occasional constitution in layers must be borne in mind. They should be broken to pieces, and some of the powder from each layer carefully analyzed.

The best mode of proceeding analytically, is to heat some of the powdered calculus over a spirit lamp on platinum foil. Then if (1) the powder is *entirely* consumed, or only a *very small* amount of residue is left, it may consist of uric acid, or urate of ammonia, cystin, protein bodies; or (2) the powder is *incombustible,* or leaves considerable residue after being exposed to red heat, it may consist of urates with a fixed base (sodium, lime, magnesia), oxalate of lime, carbonate of lime, phosphate of lime, or ammonio-magnesian-phosphate. If, when the powder is acted upon by nitric acid and ammonia, a distinct murexide reaction is obtained, the concretion is formed of urate of ammonia or uric acid, and these substances are thus distinguished: Uric acid is only slightly soluble in boiling water, whilst urate of ammonia is far more soluble, and in much larger quantities, and, upon the cooling of the solution, it is again precipitated, and with liquor potassæ gives off ammonia.

The uric acid calculus is of quite frequent occurrence and is sometimes of considerable size. It is usually of a yellowish or reddish-brown color, with a smooth surface and rather hard.

The urate of ammonia calculus is of rare occurrence. It is generally small, of a loamy lightish color, and more earthy in consistence than the preceding substance.

If there be no murexide reaction and the concretion is combustible, it may consist of one of the following:

The cystin calculus is rare. It is of a dull yellow color; the surface is smooth, and exhibits a glistening crystalline appearance when broken. It is softish, and when reduced to powder communicates a soapiness to the fingers. From the larger amount of sulphur contained in it, if this calculus be dissolved in liquor potassæ and a little acetate of lead be added, the solution being then boiled, the mixture becomes *inky* from the precipitation of the black sulphide of lead.

A calculus formed of protein substances (fibrin or blood coagula) is very rare. It is amorphous in appearance; upon

burning, it gives off an odor of burnt horn, it swells up on the addition of acetic acid, and is soluble in boiling nitric acid.

Urates of sodium, lime and magnesia are very seldom found as the only constituents of a calculus, but they are occasionally met with in variable quantities in calculi consisting chiefly of other substances, viz., in the uric acid and urate of ammonia calculi. The powdered calculus is boiled with distilled water, and the solution filtered while hot; if urates are present, they will be found in the filtrate. This is evaporated, the residue being heated to redness, and if it turn moistened turmeric paper *brown,* will indicate sodium or potassium. Sodium imparts a yellow, potassium a violet tinge to the blowpipe flame. Magnesia and lime will be found in the residue, as carbonates; these are freely soluble in diluted acids. Upon the addition of phosphate of ammonia and sodium to the solution, the ammonio-magnesian-phosphate and phosphate of lime are precipitated.

Oxalate of lime, when subjected to strong heat, turns black from the combustion of organic matter often present, but becomes white again after continued exposure to heat, being converted into caustic lime. If this last substance be dissolved in hydrochloric acid and oxalic acid added, oxalate of lime is precipitated, which may be recognized by its microscopic appearance. The oxalate of lime calculus is frequently met with; it is either small, smooth, and pale in color, or larger, with a nodular, warty surface, and of a dark-brown or black color (the mulberry calculus). It is common in children.

A calculus composed entirely of carbonate of lime is also rare. It is of a whitish-gray color and chalky appearance.

Carbonate of lime is generally found, in small quantity, as a component of other calculi blended with the earthy phosphates and oxalate of lime.

A concretion of carbonate of lime is infusible, and becomes black when burnt, on account of the organic matter which it often contains, but further heating renders it white. It also dissolves in hydrochloric acid *with effervescence.*

Basic phosphate of lime and ammonio-magnesian-phosphate are generally found together as constituents of urinary calculi. These calculi are usually whitish and often of considerable size. If phosphate of lime is in excess, they are hard and thick; but if the ammonio-magnesian-phosphate predominates, they are chalky

and soft. They are incombustible, and have been termed *fusible calculi,* since they fuse to a white enamel-like mass after exposure to strong heat; they are soluble in hydrochloric acid *without effervescence.*

These two constituents are separated by adding to the calcined powder diluted hydrochloric acid, and filtering the solution; then adding ammonia and oxalate of ammonia, by which the lime is precipitated as an oxalate. After filtration, the phosphate of ammonia and magnesia may be obtained by the addition of ammonia in excess. Calculi of neutral phosphate of lime are very rare; they resemble the earthy phosphates.

The composition of urinary calculi is sometimes very complicated. Thus, some consist of uric acid, urates and earthy phosphates; others of oxalate of lime and earthy phosphates; and, again, others have been met with composed of six constituents, namely, uric acid, oxalate of lime, urate of ammonia, phosphate of lime and ammonio-magnesian-phosphate. These may be all mixed together or disposed in concentric layers.

Every calculus usually possesses a nucleus which is formed by foreign bodies, such as blood coagula, mucus and fibrin, or by sand particles, but sometimes there may be a cavity instead of a nucleus, the mucus having dried up by which the nucleus was originally formed.

False or spurious calculi usually contain much silica, which will be detected by fusion with carbonate of sodium or potassium.

Urinary Tube Casts.

The generally recognized urinary tube casts are six in number. They are as follows:

1. Granular casts are dark and granular in appearance. They are about 1-700 of an inch in diameter, and are composed of fibrin and disintegrated epithelium; they are indicative of chronic nephritis, especially the inter-tubular variety, and usually occur in the urine after frequent attacks of gout. They may be found long before any other sign of renal trouble has been observed.

2. Waxy or transparent hyaline casts are quite structureless, clear glassy cylinders, and vary in diameter from 1-3000 to 1-300 of an inch. They are sometimes found in the advanced stages of chronic nephritis, but also occur in acute forms of kidney disease.

3. Oily casts consist of fibrin, in which are entangled oil globules and epithelial cells gorged with oil. They indicate fatty degeneration of the kidney.

4. Purulent casts exhibit pus-cells entangled in casts of fibrin, and occur in suppurative nephritis.

5. In blood or exudative casts the blood is moulded in the renal tubes. They are observed in cases of strangury and hematuria and acute diseases of the kidney.

6. Cellular or epithelial casts are covered by the epithelial cells of the tubuli uriniferi. They indicate that the disease is recent, and that the tubes are as yet lined by epithelium.

CHAPTER XV.

PHYSICAL DIAGNOSIS.

DISEASES of the respiratory organs and the heart are diagnosed in part by an exploration of the chest with the ear. Whilst an examination of the chest with the eye and touch will determine something of the character of the disease, and direct our attention to remedies, our reliance will be placed principally upon what we hear.

In the case of the respiratory organs, a very important part is to determine the capacity of the lung for air, or the amount of air contained in the chest, and this is accomplished by percussion. The walls of the chest are thin and elastic, whilst the lung which fills it contains normally four or five times as much air as there is of solid substance. Any elastic body containing air will give resonance when struck, and the resonance will be in proportion to the amount of air. Lessen the amount of air, replacing it with a solid or fluid, and dullness of sound is the result.

The object of percussion, then, in diseases of the respiratory organs is to determine the condition of the parenchyma of the lungs with reference to capacity for air. By examination of the healthy thorax we obtain a standard of normal resonance for different parts of the chest, and this we use as a basis for comparison. In many cases, but one side of the thorax being involved in disease, a comparison is instituted between the sound and the diseased side. In such cases, of course, the information is more

accurate, as we have the normal standard of resonance before us.

Percussion is either direct or mediate, as we strike directly upon the wall of the chest, or interpose something between. Direct percussion may sometimes be employed with advantage, using one or two fingers to give the blow. The only objection to this method is the unpleasantness to the patient, and the difficulty of making percussion of the intercostal spaces. In mediate percussion an ivory or rubber plate (pleximeter) is sometimes employed, using the finger for the stroke, or a small mallet of similar materials. The best method, however, is to apply one or two fingers accurately to the wall of the chest, and use the middle finger, supported by the ring finger and thumb, to give the stroke. It is necessary to use care in this, the fingers of the one hand being accurately applied to the chest, and the stroke being at right angles, and the muscles of the hand held firmly so as to give a quick rebound.

As the object to be determined is the capacity of the lung for air, we make percussion both during full inspiration and after expiration. In examining the margin of the lungs over the false ribs and the sternum, it is necessary to have the patient take a full inspiration to carry the lung down to the insertion of the diaphragm in the one case, and to the mesial line in the other. In making percussion over muscles it is well to put the body in such position that the muscles will be rendered tense. In examinations about the shoulder, it is raised to allow our examinations to be carried up in the axillary space, or thrown forward or backward, to enable us to reach the upper part of the chest.

In making comparison between the two sides, we are careful that there is the same degree of inflation, and it is better to have the patient take a full breath, and hold it as long as he can conveniently, or cease respiration for a moment, after the air is thrown out.

Normal resonance tells us that the parenchyma of the lung is free from effusion, it may be the seat of irritation, but the capacity for air is not interfered with.

Increased resonance in slight degree is heard when the function of one lung being impaired, the other does an increased work. In greater degree it is evidence of emphysema. When very marked and over a limited portion it is the evidence of a cavity.

Dullness on percussion evidences that the air is replaced by a solid or fluid; as is the degree of dullness, so is this change in the physical condition of the lung. We have dullness in acute pneumonia commencing about the third day, sometimes earlier, and increasing as deposit takes place in the air cells and intercellular passages and in the connective tissue—as is the dullness, so is the intensity of the disease. Resonance returns when the circulation is restored and effused materials are absorbed. Dullness is also an evidence of chronic inflammation of the lungs, being usually much more extensive than in phthisis pulmonalis, for which it might be mistaken. Dullness on percussion is heard in phthisis when the tubercle is deposited in considerable quantity and near the surface. In the earlier stages the dullness is so slight that it is not an important evidence of disease.

We have dullness on percussion where there is fluid in the pleural cavities, whether it is simply of water or the products of inflammation. In this case the dullness is of the most dependent part, and unless it is an extreme case, changing the position of the patient will change the situation of the dullness.

We have dullness on percussion in hydropericardium and, to a limited extent in hypertrophy of the heart. The situation of the dullness and the change in the sounds of the heart will determine the condition of disease.

Occasionally we have dullness on percussion from the formation of thoracic aneurism and still more rarely from growths in the cavity of the chest. Other symptoms will determine the character of the wrong.

The reader will notice that in an acute disease dullness on percussion has reference mostly to effusion into and solidification of the parenchyma of the lung. The extent of the dullness determines the amount of tissue involved, and its intensity determines, to some extent, the severity of the lesion. In so far as it suggests treatment, it would say—lessen irritation and determination of blood to the lungs—give the respiratory apparatus rest—by appropriate food, and in so far as medicines act to sustain the life of the part, and of the body at large—and by the establishment of secretion promote the absorption of effused material.

Percussion is sometimes employed in other parts than the thorax to give evidence of disease. Thus we find that some wrongs of the stomach, of the liver, spleen, bowels and reproduc-

tive apparatus, give rise to changes in the sounds heard on percussion.

Disease of the stomach with generation of gas will be evidenced by marked resonance on percussion over the stomach. In some cases of chronic disease this condition is persistent, and the continually distended stomach is pressed upwards until it occupies considerable space, and resonance might lead us to suppose that a cavity had formed in the inferior lobe of the lung, had we not symptoms of gastric lesion and the resonance extending across the epigastrium.

On the right side an enlarged liver presses upwards, encroaches upon the cavity of the chest, and gives marked dullness on percussion over the right false ribs. The evidences of wrong digestion and the fullness at the margin of the ribs will correct the diagnosis.

In distension of the bowels by gas we get evidence of resonance on percussion. If of the small intestine it occupies the anterior part of the abdomen; if of the large intestine, it is lateral or in the situation of the transverse colon.

In ascites the small intestine distended with gas floats at the top, and though we get the dullness of water below, and succussion on palpation, there is resonance at the highest part if the convolutions are free to move.

In ovarian dropsy, on the contrary, the sac displaces the small intestine as it grows, and either crowds it upward or backward. Intestinal resonance on the surface, in dropsy, is therefore one of the differential points in distinguishing between ovarian disease and ascites.

We employ palpation to determine the presence of fluid, whether in the cavities or formed by the breaking down of tissue. In some cases the evidence of fluctuation is very distinct, the wave of fluid passing distinctly from the one hand on the one side to the hand on the other. In other cases we obtain only a sense of mobility and the elasticity of fluid.

When parts give rise to sound in the performance of their functions the character of this becomes evidence of disease. This is the case with the respiratory apparatus, the heart, and, to a less extent, with some other parts.

Listening to sounds thus produced is called *auscultation,* and, as practiced, may be either direct or mediate. In direct ausculta-

tion the ear is applied to the part and the sounds heard. In mediate auscultation the stethoscope is employed as a conductor of sound. Some physicians prefer direct auscultation, but the stethoscope is most frequently employed.

In the practice of auscultation, whether direct or with a stethoscope, the physician is careful to avoid adventitious sounds, and to place his body in a convenient position for listening. The rubbing of clothing, either upon itself or against a stethoscope, will frequently mask the sounds we wish to hear. A constrained position of the body frequently interferes with listening.

In auscultation of the chest in health two respiratory sounds are heard—the respiratory murmur and the bronchial sound. The first is heard during inspiration and expiration over the entire surface of the lung; the second is heard by applying the ear over the spinal column from the middle cervical region to the sixth dorsal vertebra—the spinal column being a good conductor of sound. If the normal respiratory murmur is heard we know this portion of the parenchyma of the lung is healthy; if it is changed in character, or replaced by adventitious sounds from the air cells and small passages, we know that there is disease.

We may say first that a wrong sound made in the respiratory apparatus is evidence of disease of this apparatus. We want then to determine the value of the sound and the distinct lesion that produces it.

To this end, the first question is as regards the medium for the conduction of sound. Solids conduct sounds best, fluids next best. Air stands next as a conductor, and mixed bodies last. The lung, with its spongy tissue filled with air, is a bad conductor of sound. If it is solidified it becomes a good conductor and sounds will be heard which otherwise would not reach the ear. Fluids compressing the lung are also good conductors of sound. To determine this point, then, percussion is made—if there is resonance the sound is referred wholly to a wrong of the part where it is produced; if there is dullness on percussion it is referred in considerable part to the consolidation of lung or to the effusion, which gives a better conductor of sound.

Morbid sounds may be divided first into blowing and crepitant, having reference to the parts in which they are produced. Blowing sounds are produced in bronchial tubes and crepitant sounds in the intercellular passages and air cells.

Blowing sounds are *blowing*. The idea the listener gets is of air blown through a tube possessing some elasticity. In the blowing sounds heard in diseases of the respiratory apparatus, the listener gets an idea of obstruction; the air does not pass as freely as in health. In one case the sense is of constriction—evidently the caliber of the tube has been diminished—the sound has the higher tone or shrillness that would be thus produced. In another case the obstruction is evidently within the tube, either from fullness of mucous membrane or from increased secretion, and the sounds are lower in tone—duller—or show the evidence of mucus in more or less of gurgling. In a third class of cases the obstruction is evidently from want of elasticity and tone in the tube, which yields before the passage of air, both in inspiration and expiration—the wavering tone of the sound determines this condition.

In so far, then, as we have analyzed the simple character blowing, we have suggested to us a rational practice of medicine. Contraction of the bronchial tubes is in the majority of cases from irritation—employ those remedies which take away the irritation. Fullness of mucous membrane suggests the use of means to relieve determination of blood and to promote absorption. Increased secretion suggests the employment of means to take away irritation and determination of blood and check secretion, whilst the wavering sound, indicating atony, calls for stimulants, tonics and restoratives.

Blowing sounds are *dry* and *moist,* and these common words express clearly the idea formed upon hearing the sounds. They *are* dry and moist, as they refer to a condition of dryness or moisture of the mucous lining of the bronchial tubes.

Dry blowing sounds evidence a condition of bronchial tubes in which there is an impediment to the free passage of air, and more or less arrest of the normal mucous secretion. Dryness itself is an impediment to the passage of air, but in addition there is contraction of the bronchial tubes. We are in the habit of saying—as is the blowing, so is the contraction of the tubes—as is the sound of dryness, so is the arrest of secretion.

Contraction of bronchial tubes results from irritation, and it suggests that such means be employed as will relieve irritation. Dryness results from irritation, determination of blood, and the developed inflammatory process. Given a dry, blowing sound, we

at once think of general and local sedatives which lessen determination of blood, remedies which allay irritation, remedies which so rectify general lesions of circulation and temperature as to permit secretion, and remedies which restore secretion, if such be necessary. Thinking in straight lines, our ear gives us information of the condition of the air passages, we at once think of the pathological states, and having the factors of disease before us, we at once think of those remedies which restore normal functional activities.

Moist blowing sounds tell us of obstruction to the free passage of air and to the pressure of fluid in the air passages. As is the blowing so is the impediment to the passage of air; as is the moisture, rattling, bubbling, gurgling, so is the amount of fluid in these passages.

The ear readily determines from the character of the sound, whether the blowing is still due to contraction of the tubes, for in this case the sound is steadier and more resonant than if caused by obstruction from accumulated fluids or from atony. The well-sustained sonorous sound always means contraction—contraction results from irritation—use remedies to lessen or take the irritation away.

The impediment from secretion of mucus, muco-pus or purulent fluid is clearly expressed in the sounds heard, and it is well to take the evidence of the ear rather than any technical classification of sound. The presence of just sufficient secretion to lubricate the passages, of occasional accumulations which need removal by expectoration, of continued accumulation, giving rise to rattling sounds like the bursting of large bubbles, or the gurgling which comes from large quantities of fluid, are distinct and unmistakable. The treatment is clear—take away the causes of determination of blood, whether due to irritation of the respiratory nerves or some general lesion. Give these tissues such support as we can by the use of remedies that give local or general stimulus and tone. And to a certain extent favor the removal of these accumulations by expectoration—usually by giving strength to the respiratory apparatus.

The evidence of atony of the respiratory passages is found in the yielding or tremulous character of the sound. Whilst the evidence of contraction was found in the *well* sustained sound, this is found in the *feebly* sustained sound. The treatment is clear—

to sustain and increase the strength of the patient, and to stimulate and strengthen this enfeebled organism.

When cavities are formed in the lung communicating with the bronchial tube the ear detects a peculiar blowing sound, as of air blown into a bottle. This may be dull and more or less gurgling, showing that the process of removal is not yet completed, and the walls of the cavity are of the spongy, partly broken-down lung. Or it may be clear, well sustained and more or less resonant, showing the removal of deposit and cicatrization.

Small blowing sounds, varying in character, shrill, whistling, piping, irregular, tortuous, dry, moist, rattling, all combined, in varying proportions, are the best evidences of phthisis pulmonalis. If the reader will think for a moment of the structures involved, the situation of the tubercular deposits, how they must press upon the smaller bronchial tubes, changing their position, making them tortuous, changing their caliber, he will see at once that these are just such sounds as might be expected.

In addition to these small, *queer,* blowing sounds, the ear detects that known as *dry* crackling. During a full inspiration three or four distinct crackling sounds are heard, which seem to the ear very much like the sounds produced by separating two surfaces attached by a glutinous fluid. And undoubtedly this is the condition, for if the tubercle is so deposited as by pressure against a bronchial tube to efface its cavity, the separation of the glutinous walls of mucous membrane would give just such sound.

Crepitant sounds take the place of the respiratory murmur, and are formed in the air cells, the intercellular passages, and the minute bronchial tubes. When, therefore, small crepitation is heard, we refer it at once to disease of the parenchyma of the lung. If we inquire into the condition of the lung—the changes of structure that will produce such sound—we find it in irritation, determination of blood, and slight effusion into these minute air passages. If the effusion goes on, the lung is rendered impermeable to air and the crepitant sound ceases.

Crepitance is therefore the evidence of inflammation of the lung in its first stage, and is associated with resonance on percussion, for the disease has not progressed to hepatization. Where effusion has taken place to the extent of giving dullness on percussion, the crepitant sounds are replaced by blowing sounds from the bronchial tubes, the lung being now a better conductor

of sound. Larger crepitance refers us to the minute bronchial tubes, and is the evidence of capillary bronchitis. The smaller crepitance is not only heard in the first stage of the inflammation of the lungs, but returns with the absorption of the effused material and resolution, and is, therefore, the evidence of the subsidence of the disease.

As crepitance is the evidence of the active stage of an inflammation, in which irritation and determination of blood are the prominent factors, the treatment is plain. In so far as we can take away the irritation and stop the determination of blood, our treatment will be rational. The frequent pulse, the high temperature, and the rapid respiration, are important elements in the furtherance of the local disease, and means that will rectify these wrongs are of first importance. As the succeeding stage is one of local depression of life, no means should be employed that will depress either the life in general or of the affected part.

Where solidification of a lung has taken place it becomes a better conductor of sound, and if now the ear is applied and the patient is engaged in conversation, the voice seems to come out through the chest. We do not get articulate speech, but simply the modulations of the voice. This is called bronchophony (speaking through the bronchial tubes), but its only value is to determine solidification of the lung, and percussion is the better evidence.

If there is fluid in the chest, and the ear is applied over it, the patient conversing, the voice seems to come out through the chest, but has a tremulous tone. This has been called egophony, and is one of the evidences of fluid in the pleural cavities.

If the ear is applied over a cavity, which is free and communicates with a bronchial tube, and the patient is engaged in conversation, the articulate voice comes to our ear through the chest. This is called pectoriloquy, and is additional evidence of the formation of a cavity in the lungs.

In some cases of structural disease of the pleura, the result of inflammation, certain friction sounds are heard, but they are not very common, distinct or definite. Once in a while they are said to assume the distinctness of the "creaking of new leather."

We employ auscultation in the examination of the heart with as much advantage as in diseases of the respiratory apparatus. As the sounds produced by the heart are much louder, and more

distinct and arbitrary, many persons will succeed better in auscultation of the heart than of the lungs.

The normal sounds of the heart are smooth, uniform in tone, regular in time, and give the ear an agreeable sensation. No description in words would give the reader a sufficient knowledge of them; they must be heard to be thoroughly known.

If, in examination of the heart, we find that the sounds are normal, we are quite sure that there is not structural disease of this organ. If there are general symptoms of heart disease, the wrong is functional. If, on the contrary, the heart sounds are changed, or replaced by adventitious sounds, we are just as sure that there is structural disease of the organ. The two exceptions to these rules are: (1) In case of anemia or spanemia we hear blowing sounds, which are referred to the wrong in the blood, and not to the heart; and (2), in fatty degeneration, no change in the sounds of the heart announces the structural lesion.

The morbid sounds of the heart may be divided into blowing and sawing, and the ideas conveyed by these words represent exactly the character of the sound. Whilst blowing sounds may be referred sometimes to lesions of the walls of the heart, and a wrong in muscular contraction, the sawing sounds are referred to the openings of the heart, and to the valves, and usually to lesions that obstruct the free flow of blood.

The blowing sounds have been named *bellows* murmurs, and have every range between the simple, smooth, blowing sound, similar to that heard from the bronchial tubes, to the roughened, irregular, rattling sound, similar to that produced by a pair of bellows in motion. If the sound is dependent upon poor blood, it may many times be heard over the large arteries as well as the heart, and in this case will call for the proper restoratives and food to make good blood. If dependent upon enfeebled nutrition, or degeneration of the walls of the heart, we employ means to give the heart rest, see that it is not subject to excitement, and employ means to improve nutrition. The rough, irregular sound that is attributed to valvular insufficiency and regurgitation would demand the same treatment.

The saw sound has been divided into three varieties, the saw, rasp and file sounds, but the distinction has but little reference to conditions of disease or to the use of remedies. Pos-

sibly the finer sounds may refer to a more acute condition of the ease, in which plastic material is yet being deposited. In some cases of valvular insufficiency we hear a marked saw sound, but it has an irregularity and dullness that we do not meet with in the other cases.

The more common lesions that give rise to contraction of the openings of the heart, and such diseases of the valves as prevent their free movement, are inflammatory, and give fibrinous exudation as the result. The most of these are rheumatic in character, involving the tendinous portions of the muscle and the endocardium. There are rare cases in which the sounds are due to fibrinous vegetations from the valves or to ossific deposit in their structure.

The treatment suggested by these sounds has reference, first, to rest, and secondly, to means which will promote absorption and give us a better renewal of life. Rest is absolutely essential to recovery from chronic inflammation and the absorption of its products. We want physical rest and mental rest, and such relief from irritation of the cardiac nerves as may be obtained from the use of cactus, cretægus, pulsatilla and the special sedatives. Removal of the deposits is facilitated by the establishment of free secretion, and a better heart is made by means to obtain good blood and good nutrition.

To determine pregnancy after the fifth month, the stethoscope is applied over the lower abdomen to hear the beating of the fetal heart. If it is heard the diagnosis is clear, but if not, we are not yet certain that pregnancy does not exist, for in many cases, from feebleness of the movement of the fetal heart, excess of liquor amnii, thick abdominal walls, or the position of the child, it cannot be heard until late in pregnancy, or not at all.

The greater part of the remainder of this chapter is taken in substance from a work by Dr. J. C. Thorowgood, an eminent English diagnostician.

For the purposes of examination of the pharynx and larynx the patient must be placed opposite a good light, and when he has opened his mouth the tongue should be gently drawn forwards and downwards, rather than merely depressed by a spatula, so that thus it may be out of the line of vision. The parts to be first examined are the pillars and arches of the soft palate. Normally often redder than the surrounding mucous membrane,

these structures should appear free from any trace of catarrh, and the arches on each side of the uvula should be well-formed and symmetrical. The uvula should not be swollen or unduly pendulous, and the tonsils, if healthy, scarcely visible. When the patient inspires deeply through the throat, the posterior surface of the pharynx comes well into view, and should not be rough or granular-looking, nor should it exhibit any sign of venous congestion, increased secretion or ulceration. The small nodules that are seen are caused by the presence of small follicular glands, and the whole mucous membrane is covered with pavement epithelium.

A translucent appearance about the edge of the uvula and palatine arches indicates edema of the parts; and much catarrhal mucus indicates cold caught or an unhealthy state of the digestive organs. Under either of these conditions the voice will be thick, husky and nasal.

The larynx is examined by means of the laryngoscope. In the best forms of the laryngoscope, a mirror, fixed to a spectacle-frame by means of a ball-and-socket joint, is placed before the eye of the observer, opposite to whom sits the patient with his head thrown slightly back and his mouth open. A lamp is placed on a level with the patient's left eye, from which the light, falling on the reflecting mirror, is projected into the throat, and so illumines the small laryngeal mirror which is held by the physician just over the larynx, and in which, therefore, the laryngeal image is readily seen by him as he looks through the small aperture in the center of his reflecting mirror.

As soon as a ray of light is clearly thrown from the reflector onto the uvula of the patient, the observer must take the warmed laryngeal mirror in his hand as he would a pen, and pass it over the dorsum of the tongue, which organ must be drawn well forward by the free hand grasping its tip with a soft napkin.

He should then pass the mirror backward until it reaches the uvula, care being taken not to touch the surface of the tongue, as retching would then be the result.

The laryngeal mirror being thus in position, with its metallic surface gently pressing the uvula upwards and backwards, the patient must be directed to say "eh" or "ah," and the image of the larynx will then be seen reflected in the mirror. A little movement of the mirror to right or left, up or down, will bring

all the parts of the larynx under inspection. First will be seen the back of the tongue and its papillæ; then, at the top of the mirror, comes into view the epiglottis and the glosso-epiglottidean ligaments. From each side of the epiglottis extend the ary-epiglottidean folds, containing the small prominences known as the cartilages of Wrisberg and of Santorini. These last cartilages surmount the arytenoid cartilages, and are seen at the bottom of the mirror. Between the aryteno-epiglottidean folds and the true vocal cords is seen the red mucous surface of the ventricular bands, or false vocal cords, containing in their free edge the thyro-arytenoid ligaments. Between these ventricular bands appears as a dark line on either side the ventricle of the larynx; by turning the mirror so as to get a lateral reflection, the space of the ventricle is better discerned. Below these parts are seen the true vocal cords shining like mother-of-pearl, and moving to and fro in the acts of phonation and respiration. Beneath the cords can sometimes be seen the rings of the trachea, and, rarely, the opening of the right bronchus.

The true vocal cords constitute the limit of the greater part of the rima glottidis. Posteriorly they are continuous with the vocal process of each arytenoid cartilage, so that the anterior part of the chink of the glottis is ligamentous, and the posterior part or base of the lozenge-shaped chink is cartilaginous. The vocal cords are covered with pavement epithelium, the rest of the laryngeal epithelium being ciliated.

It should always be remembered that the parts of the larynx seen to the right and left in the mirror correspond with the patient's right and left; thus there need be no confusion in describing the appearance of the parts as seen by the observer.

The opening of the glottis is bounded laterally by the arytenoid cartilages and vocal cords; its apex is the thyroid angle or anterior commissure of the vocal cords. This aperture dilates in inspiration, and contracts in expiration and phonation. To see it dilate, the patient must be directed to inspire deeply, and then the posterior and anterior walls of the larynx are well opened to view. The arytenoid cartilages, surmounted by the cartilages of Santorini, will be observed widely to separate, and thus to display the rings of the trachea.

Sometimes the ventricular bands or false vocal cords approach so near the median line as to hide the true vocal cords from view.

In such a case a deep inspiration will cause a full separation of the ventricular bands, and then the white true cords are seen below the ventricles of the larynx.

The color of the epiglottis is like that of the inner surface of the eyelids; in shape and size this cartilage varies much.

An inflamed and catarrhal condition of the larynx is known by the epiglottis, on its posterior surface especially, being tumid and very red. The arytenoid cartilages also may be of a deep red color, and swelled to the size of small beans. The superior or false vocal cords may be affected by catarrhal inflammation, and, losing their natural pale red hue, they become deeper in color, and by swelling encroach on the ventricles of the larynx, so as to obscure the true cords. When these last-named structures are inflamed they lose their white color and become injected with an irregular red mottling. If the inflammation is severe, the margin of the true cords is rounded from edema, and respiration obviously much impeded. In these catarrhal conditions of the larynx, strings of viscid mucus are often seen extending across the laryngeal aperture.

In narrowing of the laryngeal aperture inspiration is observed to be slow and prolonged, and may be accompanied by a crowing sound, or stridor, as is observed in the case of children when the rima glottidis is constricted by croupous inflammation.

Should it be observed that the patient cannot form a properly sounding cough or sneeze, attention should be directed to the way in which the vocal cords come together, for the probability is that one of them (usually the left) will be observed to be motionless when an attempt at phonation is made. This indicates paralysis of the adductor muscles of the vocal cord, and may be due to a tumor within the thorax pressing on the motor nerves of the larynx. After a while the arytenoid cartilage and vocal cord on the paralyzed side becomes shrunk and wasted by atrophy.

When the mucous membrane of the larynx is seen to be thickened and covered with irregular prominences, it is probably the early stage of laryngeal phthisis, and before long ulcers will form on the cords and on the posterior surface and cushion of the epiglottis. These ulcers are irregular, with "nibbled" look at the edges, covered often with purulent secretion, and, once formed, scarcely ever get well.

The syphilitic ulcer of the larynx usually attacks the cords

and the surface of the epiglottis; it is slow in development, and very often circular, with sharply defined edges. The ulcers can be healed under a proper course of anti-syphilitic treatment; but if neglected, they spread and cause destruction of the epiglottis and of the other laryngeal structures in a most serious way; hence the great importance of early recognition and treatment. Morbid growths in the larynx often interfere very seriously with the act of speaking; they are nearly always found attached to the vocal cords. Cancer, when it attacks the larynx, spreads usually to this organ from some contiguous part.

Edema of the larynx or glottis may be a result of inflammation, or it may be part of a general state of dropsy or anasarca. The parts are tumid, and respiration much obstructed. Examination by the laryngoscope under these conditions is often impracticable, and the diagnosis is made by observing the aphonia, the harsh, barking cough, and the difficult, hissing respiration. The finger passed deeply into the throat will detect the swelling about the epiglottis and the rima glottidis.

The naso-pharynx and nasal passages may be inspected by means of a laryngeal mirror fixed on a slightly curved shank, and turned upwards just in the opposite direction to that employed in laryngoscopy. Rhinoscopy is a more difficult process than laryngoscopy. Where a pendulous tumor or nasal polypus occupies the posterior nares and extends down behind the soft palate, its relations are best made out by means of the finger passed deeply behind the soft palate. Further knowledge may be acquired by dilating the anterior nares by a trivalve nasal speculum, and seeing how much of the tumor can be thus brought into view.

In examining the thorax by inspection, the chest must be uncovered, and the patient made to sit, lie, or stand in a good light. Note should then be taken of the movements of elevation and expansion as the breath is drawn, and these movements viewed anteriorly, laterally, posteriorly, and from above downwards, the observer standing above and looking down at the movements of the chest of the patient sitting below.

Note should be taken of any enlargement of the cutaneous veins, for this may indicate obstruction to the circulation beneath, and attention should be paid to any irregularity or thickening about the ribs or their cartilages. Lateral flattening of the ribs, and consequent diminution in the lateral diameter of

the thorax with protrusion of the sternum, is observed in children afflicted with rickets. There is also seen a groove on either side of the sternum, extending from the first to the ninth ribs along the line of junction of the ribs with their cartilages. This change is produced by the recession of the thoracic wall during inspiration. The groove extends farther down on the left than on the right side, in consequence of the support given by the liver to the thoracic wall on the right side. The chest of a rickety child is often covered with hairy down, and its forehead is square in form. Obstruction to the entry of air into the lungs by partial occlusion of the windpipe or of the bronchi by spasmodic asthma in the child, often leads to a retraction and falling in of the lower part of the thorax. Very great retraction and collapse of the lower ribs, and forcing forward of the sternum, like the keel of a boat, produce the *"pectus cariniforme."*

A well-formed thorax is symmetrical on its two sides, and from the line of the nipples slopes downward to the lower ribs. The nipple line corresponds about to the level of the fourth interspace.

Under certain conditions the conformation of the thoracic parietes may be changed as a result of imperfect development, independent of any diseased action. In this way is produced the long, narrow chest with wide intercostal spaces, and sinking of the manubrium sterni so that it forms an angle at the point where it joins the body of the bone. This form of chest is usually associated with more or less delicacy of lung.

Pathological changes in the shape of the thorax may be arranged as follows:

1. General bilateral bulging and enlargement, with increase in all the diameters of the thorax. This condition constitutes the "barrel-shaped chest," and is observed in advanced large-lunged emphysema, resulting usually from long-standing bronchitis.

It will be observed that in these emphysematous chests very little difference in circumference takes place in the movements of inspiration and expiration, the lungs being distended in a permanently inspiratory position.

2. Unilateral dilatation of the chest may be due to an excessive pleuritic effusion on that side. This great distension of one side of the chest indicates a large amount of fluid which has pressed the lung well back against the spine. Before such distension of

the chest wall is observed, it will be noticed that the intercostal spaces are flattened, so that the external surface of the chest feels even and smooth to the applied hand.

A large distension of one side of the chest will also cause displacements of the organs by pressure. Thus the heart is carried over to the right by fluid in the left chest, and liver or spleen may be pressed downward by a collection in the thoracic cavity above these organs.

Accumulation of air in the pleural sac (pneumothorax) may cause enlargement of the side. This effect is brought about by a sudden laceration of the lung by an injury, or the ulceration of a superficial deposit or cavity. The lung shrinks and collapses, while the thoracic wall becomes more and more distended with pent-up air. The rapid development of this state of chest, and the tympanitic sound of the chest when struck, serve to distinguish it from a distension by fluid. When a pneumothorax has formed, however, fluid soon collects in the pleural cavity (hydropneumothorax), and then a splashing sound is heard on shaking the patient.

3. Tumors within the chest may cause undue bulging of some part of the chest wall. A bulging of the lower part of the right chest may be caused by enlargement of the liver.

Contraction of one side of the chest may be due to the absorption of an old pleuritic effusion. The lung having been long subjected to pressure from a collection of fluid, is so destroyed that it will not expand when this pressure is removed; hence the falling and contraction of the chest wall. In these cases the ribs are drawn so close as to overlap one another, the nipple is nearer to the sternum, and the shoulder-blade to the vertebral column on the affected side. The shoulder is drawn down, and the spine curved with its convexity towards the sound side of the chest. The diaphragm and liver, on the right side, may be drawn up; and, on the left side, the heart may be drawn away from its normal position, even into the left axilla.

These signs of a contracted chest after absorption or evacuation of fluid are often seen very well marked in the cases of growing children.

Circumscribed local depressions on the surface are due to shrinking of the subjacent lung, and may be caused by the contraction of a phthisical cavity, or condensation of lung tissue

over a dilated bronchus. These local depressions should be looked for in the upper and anterior part of the chest wall.

In interstitial chronic pneumonia, cirrhosis of lung, or fibroid phthisis, the affected side, usually the right, is contracted, but the spine and shoulders are not altered, as they are in contraction of chest after pleurisy.

Tuberculosis and primary cancerous infiltration may also act as causes of retraction of the chest wall.

Mensuration of the chest is best effected by means of two tapes joined at the commencement of their scales and fixing them at this line of junction over the spine. The movement of each side of the chest in deep inspiration is thus readily ascertained. It should be remembered that in right-handed persons the right chest has always inspiratory excess of half an inch over the left. About thirty-three inches may be taken as the normal girth of a healthy chest. To trace a gradual retraction of the chest wall, as in an absorbing pleurisy, a narrow strip of lead should be moulded to the contour of the chest, then carefully laid on a piece of paper and traced by a pen or pencil. Comparison at intervals of such tracings will show at what rate chest contraction is progressing.

The antero-posterior measurements of the chest are obtained by applying a pair of common steel calipers and observing the divergence of the blades.

During inspiration a movement of expansion and elevation takes place in the thorax. In the first of these movements the sternum and anterior segment of the ribs pass forwards, the lateral outwards, and the posterior backwards. The intercostal spaces in ordinary calm breathing remain visibly hollow, the ribs diverging in forced inspiration and converging in expiration.

In the elevation movement of the chest the anterior and lateral walls are drawn upwards.

During expiration the walls of the chest are restored to their previous condition by the movements of retraction and depression. The lungs, unless fixed by morbid local adhesions, follow every movement of the chest-wall.

Supposing the time occupied by a respiratory act to be represented by 10, the value of the visible duration of inspiration would be represented by 5, that of expiration by 4, and the intervening pause by 1.

The abdominal movements of respiration differ much in the two sexes. The ordinary calm breathing of a man is effected mainly by the descent of the arch of the diaphragm, so that in counting the respirations of a male the hand should be applied over the epigastrium.

In the female, abdominal expansion is almost *nil,* and always posterior in time to the upper costal movement; hence, in counting the respiration of a female, the hand must be placed over the upper third of the chest.

The expansive movement of the chest can be roughly estimated by applying the palms of the hands under each clavicle while the patient inspires deeply. By practice the correspondence in expansion of the two sides can be very fairly judged by this method. To gain a more accurate knowledge, two pieces of measuring tape should be joined at the commencement of their scales, and the measurement made by placing this point of junction over the spine in the manner already described. In children, thoracic expansion is greater, and abdominal breathing less than in the adult.

Chest movement may be much changed by disease. In peritonitis and diaphragmatic pleurisy but little abdominal movement will be seen; and in intercostal neuralgia, pleurodynia, and the outset of pleurisy, movement will be notably diminished on the affected side. More or less tenderness on pressure will be found at the part where this limitation of thoracic movement is most marked.

Sometimes the respiratory movements exceed those of health. If the upper air-passages are obstructed by laryngeal swelling or stoppage, then the chest will actually retract during inspiration, while the abdomen enlarges from the descent of the diaphragm. In highly developed vesicular emphysema of the lungs, the lower intercostal spaces will be seen to fall in during inspiration. The cause of this is the rarefaction of the air within the lungs, and the consequent preponderance of the external over the internal atmospheric pressure. The retracted state of the lower intercostal spaces, and the forcing forward of the sternum, seen in cases of "pigeon breast," are conditions due to obstructed inspiration, dating usually from infancy, at a time when the thoracic walls are young and yielding, and so easily forced out of shape by unusual and irregular respiratory strain.

In some consumptive persons, with the upper part of the lungs disabled by disease, it will be seen that the lower lobes of the lungs act vigorously, the diaphragm contracting powerfully. In those who are emphysematous from old-standing bronchitis, but little movement of the thorax will be seen save in an up and down direction, with much straining of the sterno-mastoids and other muscles of the neck.

A healthy adult man breathes about 18 times a minute, but a slight variation from this point (above or below) is not inconsistent with perfect health. A new-born child breathes about 40 times per minute. Increased action of the heart by exertion quickly increases the rate of the respirations.

Various morbid causes may lead to an increase in the respirations, and they may rise as high as 60, 70, or 90 per minute. In an acute attack of spasmodic asthma, due to constrictive narrowing of the smaller bronchi, the respirations may quickly reach 80 in the minute. In some abdominal diseases, as ovarian tumor, dropsy, etc., rapid and difficult breathing is speedily induced by the recumbent position.

In fevers respiration is usually much quickened. This appears to be a result of the high temperature, for the pulse does not always rise in correspondence with the respiration.

In pleurisy and pneumonia the respirations are notably quickened.

In laryngeal obstruction inspiration may be much prolonged, so that the respirations become abnormally slow. The same condition is observed in croup. In some diseases of the lungs, followed by affection of the brain, a great slowness of the respirations has been noted. Respiration may fall as low as eight in the minute.

The ratio of the respiration to the pulse is important; more so, indeed, than any absolute frequency of pulse or respiration taken alone. In the adult the natural ratio is 1 : 4, or 1 : 4.5. Dr. Walshe has recorded as extreme pulse-respiration ratios 9 : 1 in chorea; 1 : 1.25 in acute pneumonia. In hysteria the range has varied from 5 : 1 to 1.8 : 1.

In paralysis of the vagus nerve from pressure of a tumor, or other cause, respiration has been noticed to fall as low as 12 per minute.

There is a special form of dyspnea known as "Cheyne-Stokes

respiration," met with in some forms of disease of the heart and brain, which consists in a regularly occurring pause, lasting one-fourth to one minute, during which respiration is completely suspended. This suspension is preceded by a short, shallow inspiration, becoming at length very difficult, then the respiration becomes again shallow, and eventually comes to a standstill, as is just indicated. The whole cycle of the above phenomena is worked in about one and a half minutes. This form of dyspnea is of very serious import, and usually betokens a fatal result.

In persons prone to attacks of dyspnea, it will be observed that the accessory muscles of inspiration, such as the sterno-mastoid, scalenus and omo-hyoid, stand out prominently. In subjects of old emphysema and asthma this condition of the muscles is well shown. Sometimes, where expiration is very difficult and impeded, the contractions of the accessory expiratory muscles of the abdomen can be plainly seen. Normally, expiration is effected by the elasticity of the lungs alone, but when this natural elasticity is diminished by emphysema or bronchial catarrh, then expiratory aid from the accessory (abdominal) muscles is required.

When a patient can lie flat on his back, his dyspnea is by no means severe, but as it increases he has to raise himself, till at last he sits up erect, and is then said to be in a state of orthopnea, a form of breath-difficulty usually seen in the instances of asthmatic persons, and of those who have dropsy connected with diseases of the heart.

After the expansion of the two sides of the chest has been estimated by the applied palm or surface of the hand during deep inspiration, examination should be made by touch and pressure over the ribs and intercostal spaces, to see if there be any tenderness on pressure.

Pain due to periostitis of a rib will be increased by pressure; so, too, will pain due to pleurisy, if pressure be made over an intercostal space, and this pain on pressure is usually confined to the seat of the pleurisy, and does not extend backward along the course of a nerve, as it does when due to intercostal neuralgia.

Vocal fremitus is a vibration of the walls of the thorax, perceptible to the hand during speaking in a loud, ringing voice. This vocal fremitus is always most evident on the right side of the chest, the right bronchus being more capacious than the left,

and it is generally more perceptible in the upper than in the lower part of the thorax. Vocal fremitus is entirely abolished when one side of the chest is full of fluid, but if the lung be inflamed, as in pneumonia, with its parenchyma consolidated and firm, then the vibration on making the patient speak is notably increased. Thickening of the pleura may cause a very distinct vibratile thrill, felt by the hand applied during respiratory movements.

Bronchial fremitus indicates the presence of diffused bronchial catarrh, and is a noteworthy symptom in the bronchitis of children, as, owing to imperfect expectoration, mucus collects largely in the bronchi. In vesicular emphysema, vocal fremitus is scarcely perceptible unless bronchitis coexists. Fluctuation in the thorax is occasionally felt when much fluid is present in the pleural cavity, by placing the palm of one hand at the back and tapping on the front with the fingers of the other hand. Fluctuation of fluid in pulmonic cavities of large size has been now and then detected.

Percussion is a most important aid to the physical diagnosis of diseases in the thorax or abdomen. What is called immediate percussion consists in striking the thorax directly with the tips of the fingers. It is a method now abandoned, as it does not enable us to distinguish with sufficient precision between the finer shades of difference in the pitch or quality of percussion sounds.

Mediate percussion is practiced by interposing the finger as a plexímeter between the thoracic wall and the percussing finger. The index finger of the left hand is applied closely and evenly to the chest, and then this is tapped with two or three fingers of the right hand kept firmly together. The movement of the right percussing hand must spring from the wrist only, the forearm must be motionless. The blows must be gentle at first, for thus we avoid hurting any tender part, and by this method we obtain accurate knowledge of the density or dullness of superficial parts. When deep-seated structures are the object of investigation, the blow must be more forcible. The blow must be given and the fingers withdrawn quickly, so that surface vibration be not impeded. The only exception to this rule is when we wish to elicit a "cracked pot" note over a lung cavity.

Position of the patient should, if possible, be that of stand-

ing or sitting; more accurate results being thus obtained than where the patient is recumbent in bed. While the front of the chest is percussed, the arms should hang loosely by the sides. The hands may be clasped across the top of the head during percussion of the lateral and axillary regions, and during examination of the back the head must be bent forward and the arms tightly crossed in front.

Percussion should commence at the supraclavicular region, and proceed symmetrically downwards on each side, till, on the left side, at the fourth rib, the heart is encountered, and the note on striking becomes therefore dull as we pass from the air-containing resonant lung to the solid heart. On the right side in health we find resonance to cease at the sixth rib, where we come over the dull-sounding liver.

The resonance of the percussion note over healthy lung is due to the vibration of the air contained in the pulmonary vesicles, in part also to the vibration of the thoracic parietes. The greater the body of healthy lung beneath the spot struck, the lower will be the pitch, the longer the duration, and the softer the quality of the percussion note. About the fourth interspace, on the right side, a perceptible elevation of pitch on percussion will be marked; at the same time the applied finger will recognize an increased sense of resistance to firm percussion. The cause of these changes is that the liver lies here behind the shelving border of the lung. On deep inspiration a portion of lung fills out and extends in front of the liver, a fact that a skillful percussor will be able to demonstrate by using very gentle percussion after a very complete inspiration.

At the level of the fourth rib on the left side, the lungs diverge and percussion becomes dull from falling over the heart, and this dullness can be followed outward as far as, or with a firmly given blow, a little beyond, the left nipple.

The suprasternal region gives a tubular note on percussion, but sometimes this is modified if there be much cellular substance beneath at the top of the mediastinum. Below the third rib sound is toneless as we approach the regions of the heart and liver.

Percussion of the posterior regions is important. The supraspinous fossæ, on firm percussion, give a good pulmonary note. Both infra-scapular regions also should be resonant as far as

the eleventh interspace, but on the right side strong percussion will bring out the hard high-pitched liver note as high often as the eighth rib. As a rule percussion of extreme right base never gives so close a note as left extreme base.

When the pulmonary cells are obstructed so that they contain no air, we get what is called a dull percussion sound. With this dullness is associated diminished mass of tone, increase of pitch, and greater sense of resistance; these conditions indicating that the air in the lung is diminished and the lung more or less consolidated, or they may show that fluid is present in the pleural cavity and the lung compressed and airless. We expect, therefore, to detect this dull, toneless note on percussion in cases where (1) the lung is consolidated from exudation into its cells, as in the second stage of pneumonia, or in case of tubercle, cancer, or abscess infiltrating the lung tissue; (2) collection of fluid in the pleural cavity, or a solid or cystic growth or tumor, would be another cause of this dullness; and (3) condensation of lung tissue from dilatation and thickening of a bronchial tube. At times the percussion note is said to be *hard* or *wooden,* with raised pitch and increased sense of resistance. This form of note is met with where air is diminished and hard consolidation of lung is present. When found at the apex of a lung, it is a great indication of early tuberculization. It is also met with at times over a superficial cavity in the lung with a thin indurated adherent wall, or where dilated bronchial tubes are surrounded by hardened tissue, as in the state known as pulmonary cirrhosis.

A third type of morbid percussion resonance is recognized where the lung sounds extra resonant; the mass of tone being increased, the pitch lowered, duration increased, and sense of resistance lessened.

These signs show excess of air in the lung and belong to the diseased states known as emphysema of lung, pneumothorax, and pulmonary hypertrophy.

The resonance in pneumothorax and hydro-pneumothorax may be tympanitic or drum-like. A temporary tympanitic note has been observed by Graves and also by Walshe rarely to occur over pulmonic consolidation, and also over the apex of the lung when its lower part is compressed by fluid effusion in pleurisy. Amphoric sound (from *amphora*, a jar) is more the sort of sound that is heard under the first of the above conditions, according

to Walshe, this sound being an exaggeration of tubular sound, and comparable to that which is elicited on filliping the distended cheek. Tympanitic or amphoric sounds on percussion are found where the lung has ruptured, and so caused distension of the pleural cavity with air, as in *pneumothorax*.

When fluid is present in the cavity of the chest, the dull percussion note can be made to vary by changing the position of the patient, and so shifting the fluid from one part to another. If the fluid be pent up by adhesions, this test fails, and then the best method to solve doubt is to puncture the dull or bulged part of the thorax with fine trocar or hypodermic injection syringe.

A *hollow* quality in the percussion note over the chest comprises the *tubular* and *amphoric* sounds just mentioned, and also a third variety known as the *cracked-pot* sound. This note can be imitated by striking the back of the hands, loosely folded across each other, against the knee—the contained air being forced out between the fingers at each blow. Usually this cracked-pot note is associated with an amphoric sound, and it is well shown when percussion is made over a large-sized cavity in the lung, which opens freely into the bronchus and has yielding walls. The patient must open his mouth, otherwise the true cracked-pot note will not be detected, though the amphoric sound may be quite plain; and, further, the percussing fingers should remain an instant in contact with the pleximeter finger; then, as the air is forced out of the lung cavity through the bronchus and mouth, the peculiar "click" of the cracked-pot will be unmistakable.

In the case of a consumptive adult the presence of this cracked-pot note on percussion is good evidence that a cavity exists in the lung; but in young children the sound may be heard often in cases of bronchitis or of pneumonia at the lung apex. The pliancy of the chest wall in those who are young is the cause of this. In all cases where the chest wall is thickly covered with muscle or fat the percussion note is more or less muffled in sound.

Auscultation, like percussion, of the chest may be mediate or immediate, according as we listen with or without the intervention of the stethoscope between the ear and the chest.

In auscultating the lungs we seek to obtain knowledge of: (1) Simple respiratory murmurs; (2) râles, or rattles, produced

during respiration by the presence of fluid in the bronchi or lung substance; (3) friction sounds, caused by the rubbing of roughened surfaces on each other; (4) dry, sonorous, and sibilant sounds, due to narrowing of the larger and smaller bronchial tubes. The pulmonary murmur of health is described as a soft, breezy sound, produced by the entry of air into the cells, or alveoli, of the lung, hence it is often called the vesicular murmur. This being the cause of the murmur, it is easy to understand how it comes to be abolished when the air-cells are impervious from being filled with exudation.

In health the vesicular murmur, audible only during inspiration, is heard over the whole thorax, most loudly at those parts which are thickly covered. It is, therefore, loud in the infraclavicular region, feeble at the supra- and infraspinous regions; it is weak where the subjacent layer of lung is thin, as at its border. Greater convexity of ribs on one side than on the other will cause the vesicular murmur to be weak on the convex side.

The pulmonary *inspiratory* sound is soft and continuous; the *expiratory* sound is slightly harsher and hollower, as well as weaker and shorter than its predecessor, and in one out of four healthy persons may be quite inaudible on the left side of the chest. The two sounds follow one another closely in health, but as we proceed to listen at points distant from the pulmonary parenchyma, so will the sounds be separated one from the other by a distinct interval. This will be well observed on listening to the tracheal sound over the upper part of the windpipe. The respiratory sounds are always louder in women and children than in men.

Bronchial respiration is best heard between the scapula, at the upper end of the sternum, and over the bifurcation of the trachea; it has not the "breezy" sound of vesicular breathing, but is of a higher pitch, and is not closely followed by expiration. Tracheal breathing is higher in pitch and more hollow than the bronchial sound, and is heard best over the trachea. The respiratory murmur is usually of higher pitch under the left clavicle, and expiration is always most audiblt on the right side.

In diseased conditions of the lungs the respiratory murmur may be altered as follows:

A. Induration and intensity, becoming (1) Exaggerated or puerile; (2) weak or senile; (3) suppressed.

B. Its rhythm may be: (1) Jerking; (2) deferred; (3) expiration prolonged.

C. Its character may be: (1) Harsh; (2) bronchial or blowing; (3) cavernous; (4) amphoric.

Exaggerated respiration is known by increase of the intensity and duration of the inspiratory and expiratory sounds. When general over one lung, it probably will be found to indicate that the other one is disabled from acting by inflammation, or some other cause; hence the exaggerated breathing in the sound lung is called *supplementary;* it is also called *puerile,* from its resemblance to the loud strong respiration of young children. Exaggerated respiration is to be regarded, therefore, as indirect evidence of disease in some part, more or less remote, of the pulmonary substance.

Weak respiration, called also senile respiration, as being characteristic of old age, is marked by diminished intensity and duration of sound. In asthma, pulmonary emphysema and obstructive disease of the larynx and air-passages by thickening or swelling, we get superficial weak respiration. When one side of the chest is full of fluid, we may hear a deep-seated weak breath sound, or all sound may be suppressed, while on the other, healthy, side we hear exaggerated respiration.

In jerking respiration the rhythm of the sound is changed, and it is best noted in the inspiration. This jerky breathing is noted in some spasmodic affections of the air-tubes, in hysteria, the early stages of pleurisy and pulmonary phthisis—usually most notable under right clavicle.

Deferred inspiration is often well marked in emphysema of the lung. The inspiratory movement of the chest commences before any sound is produced. In some cases of consolidation of the lung, an opposite condition to the rarefied state known as emphysema, the inspiratory sound ceases before the expansive movement of the chest is complete. This constitutes *unfinished respiration,* and is rare.

The normal ratio of inspiration to expiration is as 3 : 1, but it may be changed to 1 : 4, and such perversion would mark very great and unusual prolongation of expiration, and would only occur in a case of emphysema, where the natural elasticity of the lung was much impaired.

Bronchial respiration, of pathological origin, may be high or

low in pitch, and it indicates more or less consolidation of the lung around the bronchial tubes. It is heard very harsh, and high in pitch, when the upper part of the windpipe is compressed by tumors, or narrowed by exudation, as in croup and diphtheria. When the air-cells of the lung are filled with exudation, as in the hepatization stage of pneumonia, we hear bronchial breathing over the part thus solidified. Under these conditions also we hear *bronchophony,* or bronchial voice, when the patient speaks, his words being conveyed with a brazen clearness into the ear of the listener in consequence of the solid lung becoming a good conductor of sound.

Bronchial respiration, less intense than that heard during the hepatization stage of pneumonia, can be detected over portions of the lung rendered more or less solid by congestion, by caseous degeneration (phthisis), by chronic interstitial pneumonia with dilatation of the air-tubes, and in the vertebral groove in cases of pleuritic effusion where the pulmonary tissue is rendered airless in compression. Such compression of the lung may result from fluid in the pleura, or from an aneurism or other form of tumor.

The hollow sound of cavernous breathing is heard over a cavity in the lung, and is therefore commonly met with in cases of advanced consumption at the anterior or posterior part of the lung apex. Expiration under these conditions is usually of higher pitch than inspiration, and the sounds often have a whiffing metallic note. In very large lung excavations with dense walls, as well as in cases where the pleura itself is full of air that has escaped from a rupture in the lung tissue (pneumothorax), we get *amphoric* breathing, hollow, high-pitched and metallic, like the noises produced by blowing into a jug. The amphoric note is heard both with inspiration and expiration, and the best place to hear it is about the middle of the thorax. While listening to the amphoric respiration, the observer may hear *metallic tinkling,* a sound produced by drops of purulent matter falling from the top to the bottom of the large cavity.

Fluid and air together in the pleural cavity (*hydro-pneumothorax*) produce the succusion or splashing sound on moving the patient from side to side. It should be noted that cavernous breath-sound may be heard over dilated and bulged bronchial tubes (*bronchiectasis*) when these are surrounded by dense

pulmonary tissue. At times cavernous breath-sound is heard one day and not the next. This is due to the cavity being full of secretion; after the patient has got rid of this by coughing the cavernous sound will be very distinct.

The above-named accidental sounds, indicative of disturbances in the respiratory process, are produced in the air tubes, the air cells, or in cavities formed by disease in the lung tissue. Being formed within the lungs, these sounds may be called *endo*-pulmonary, as distinguished from the *exo*-pulmonary sounds produced by pleural friction. Endo-pulmonary sounds may be dry, moist, or indeterminate in character.

Dry or vibrating bronchi may be sibilant and high-pitched, or sonorous and low-pitched.

The sibilant rhonchus, or râle, is a whistling or hissing sound, varying in intensity and duration, co-existent with inspiration and expiration, though now and then limited to one or other act only. The cause of this sound is a narrowing of the smaller bronchial tubes by contractile spasm, as in asthma, or far more often by swelling of their lining membrane with deposition of viscid mucus. Coughing, by altering the position of this collected mucus, will often clear away the rhonchal sound for a time. Persistence of the sibilant râle in one spot indicates narrowing of the bronchial tube there by continuous spasm or by pressure from some growth or tumor. Generally this sibilant râle is found associated with bronchitis in its early and dry stage and pulmonary emphysema. When secretion commences into the air-tubes, then bubbling sounds will be heard, fine at the bases of the lungs, and coarser higher up in the chest.

Sonorous rhonchus, like the sibilant, is of a vibratile character, and is a deep snoring or grating sound, rather more marked in expiration than in inspiration, produced in the larger air-tubes and associated with bronchitis, emphysema and spasmodic asthma.

Mucous rhoncus or râle is a moist sound produced by the bursting of bubbles of unequal size, and it can be modified by coughing and expectoration. The bubbling is audible with inspiration and expiration as the air passes through fluid (mucus, blood or pus) in the smaller air-tubes. The best place to listen is over the central and middle parts of the lung. The disease with which the moist râle is associated is bronchitis after secretion has become established.

Sub-mucous or sub-crepitant râle is a weaker and finer bubbling sound, chiefly heard with inspiration, and produced by the bubbling of air through viscid fluid in the minute bronchioles. The diseases with which it is associated may be capillary bronchitis of both lung bases, tubercular bronchitis at the apex of one lung, and the resolution stage of pneumonia.

With respect to mucous râles, it should be borne in mind that a few scanty râles may be heard in the chest of many perfectly healthy individuals on causing them to take a few sudden deep inspirations.

The crepitant râle of pneumonia, known as the moist crepitating râle of Laennec, requires a word of special notice. This sound resembles that produced by rubbing the hair of the head between the fingers close to the ear, and it is produced in the chest, in the extremities of the smallest bronchioles and in the air cells, by air forcing its way through glutinous secretion. It is best heard at the close of full inspiration. The fine crepitations are uniform, not unequal, and are not removed by coughing.

This condition occurs in the early stage of pneumonia, before the lung cells are blocked with exudation, and so made impervious to air.

In pulmonary edema, or swelling of the lung substance, a condition met with often in dropsy, serous fluid is poured out into the air cells and bronchi, producing an irregular, unequal crepitation as the breath is drawn.

Crepitation may be heard at times over collapsed portions of lung, and over lung compressed by collection of fluid in the lower part of the pleural cavity.

Redux crepitation consists of a slowly-evolved bubbling, audible in expiration as well as in inspiration. It is due to air bubbling through fluid contained in the smaller bronchi, and is indicative of the resolution of pneumonia.

Friction sounds of grazing, rubbing, creaking, grating variety, are due to the rubbing together of two surfaces roughened by the deposit of lymph of varying consistence. When produced between the layers of the pleuræ, this sound appears with inspiration, and often, too, with expiration, as a series of abrupt jerks, very superficial, and attended with some degree of thrill or fremitus felt by the applied hand. In old chronic thickenings of the pleura this fremitus may be very marked and the

attendant to-and-fro sound very loud. Creaky stretching sounds are heard when the two pleuræ are adherent by the intervention of plastic lymph.

As fluid effusion takes place in the course of pleurisy, the friction sound ceases, owing to the two pleural membranes being separated from one another, while at the same time a peculiar bleating twang (egophony—goat voice) is heard by the stethoscope when the patient speaks. This, however, ceases as much fluid collects, and then the side becomes dull, and respiratory sound is no longer heard.

Friction sounds are usually intensified by the pressure of the stethoscope, as in this way the opposed surfaces of the pleuræ are brought into closer contact, and the friction increased accordingly. Râles in the lung and air-tubes are unchanged by increasing the pressure of the stethoscope.

Obstruction of the bronchi by plugs of mucus can be removed by causing the patient to cough, and then, the passage being clear, the respiratory murmur, previously suppressed, becomes audible.

Mucous râles are intensified after the act of coughing. When the lung is solidified cough resonance is increased, and when large superficial cavities are present, auscultation over these, when the patient coughs, discloses a loud metallic ring.

The most sensitive part of the pulmonary mucous membrane is that which protects the larynx and trachea as far as its bifurcation. The mucous membrane of the bronchi is less sensitive. This will account for the fact that people usually refer their cough to the throat; and when blood is expectorated, as it is first perceived when it comes in contact with the lining of the trachea, patients usually believe it must proceed from the throat.

A few short, slight coughs every morning, with a scanty mucous expectoration, is very significant of early phthisis.

Continuous cough, with varying expectoration, is common in all diseases of the respiratory organs. Spasmodic or convulsive cough is best exemplified in whooping-cough.

The examination of the sputa is often of importance. The quantity of the sputum varies in acute as well as in chronic diseases of the respiratory organs. Sometimes in the course of severe acute disease, as senile pneumonia, there is no sputum, and in chronic disease also it may be absent. Children commonly swallow their expectoration. When in bronchitis, pneumonia or

whooping-cough the sputum becomes more copious, more easy of discharge, and yellowish, it comes chiefly from the larger bronchi, and indicates that the smaller tubes are getting clear and the disease passing off. Heavy, firm sputa sink in water while keeping their rounded form. Such expectoration may come from a cavity in the lung. Generally the air and mucus present float at the top of the water, while purulent matters subside to the bottom.

Very fluid sputa may come from an edematous lung. When one lung is crippled by pressure from pleural effusion, the other may become edematous, and one sign of this serious complication is the discharge of copious albuminous liquid expectoration, sometimes mixed with blood.

A clear, glairy sputum is commonly observed in the early stages of laryngeal catarrh. As the disease progresses towards its abatement, the expectoration becomes thicker, yellower and more rich in cells; this is the "muco-purulent" expectoration. When the smaller bronchi are affected with acute catarrh, the sputum, coming from the smaller tubes unmixed with air, retains the shape of the tube, and clings to the frothy lighter secretion from the larger bronchi, which is mixed with air and floats in water, the heavier portion hanging down beneath it.

In chronic bronchitis a muco-purulent homogeneous sputum is commonly coughed up every morning on rising. If the morning expectoration be fetid in smell, and less viscid than ordinary catarrhal sputum, depositing a grayish-green sediment when left to stand, then there is reason to suspect dilatation or sacculation of some of the bronchial tubes, a condition known as bronchiectasis. The cough, under these conditions, comes on in violent paroxysms, with copious bad-smelling expectoration, and then follows an interval of rest and freedom from cough.

In pulmonary phthisis the expectoration is at first watery, or clear and mucilaginous, and at times, when allowed to stand, a thick, pale-grayish sediment forms which is very significant. After a while purulent yellow striæ appear in the expectoration, which grows less and less aërated; then, as the disease progresses, the sputum becomes distinctly purulent, and full of small ragged pellets (boiled rice sputum), or large nummular masses, remaining apart in water, are seen. These lumps, which sink to the bottom of the vessel containing the expectoration,

point to the presence of lung cavities, in which these thick lumps are formed. The more compact gray masses, if boiled in liquor sodæ and the liquor allowed to stand in a conical glass, will exhibit in the scanty sediment, viewed under the microscope, specimens of the elastic fibers of the air cells of the lung. The discovery of such elastic fibers is very certain proof that the lung is being destroyed by phthisis. Copious and sudden expectoration of pus betokens the sudden rupture of a large cavity into a bronchus, or the evacuation of an empyema by the same channel.

Red or sanguineous sputa consists of blood more or less blended with the expectoration.

Copious expectoration of pure florid blood shows that a vessel has ruptured in the lung. The blood, rising into the trachea, produces a sensation thereabouts, which causes the patient often to believe that the blood must come from the throat rather than from the lungs. Hemoptysis, or blood-spitting, may be the first sign of commencing phthisis, when as yet we can detect no physical signs of the disease, or it may occur at intervals during the course of the complaint. The quantity may vary from a teaspoonful to a cupful. Copious hemorrhage in the course of phthisis may be due to the rupture of a large blood-vessel in the wall of a cavity in the lung, and when it thus arises it is most serious, and at times immediately fatal. Blood effused into the lungs is usually coughed up after the hemorrhage, and this circumstance, together with the florid, frothy, fluid character of the blood thus thrown up marks *hemoptysis* from the lungs as distinguished from *hematemesis, or* vomiting of blood from the stomach.

Bleeding from the lungs may be due to disease of the heart, especially to constriction of the mitral orifice; this condition tending to induce congestion of the lung, and at times actual hemorrhage through the throat; or the effused blood may form *infarction,* stuffing up the air cells, and producing a dull patch of what is termed *pulmonary apoplexy.* These hemorrhagic infarctions, in cases of heart disease, scarcely ever give rise to true caseous pneumonia.

The sputa may be tinged to varying degree with admixture of blood, the depth of coloration being in proportion to the quantity of blood present. When the sputum is *streaked* with blood, the probability is that the blood comes from the upper part of the air-passages, and not from the lung substance.

A scanty tough sputum, floating in water and beset with specks of blood, is very indicative of pneumonia just commencing in the stage of engorgement. As hepatization of the engorged lung comes on, the sputum becomes rusty-colored from interblended blood, and so glutinous that the vessel containing it may be inverted without loss of its contents. As resolution of the pneumonia takes place, the sputum becomes yellowish, or of greenish hue from altered hemoglobin, and fragments of small fibrinous casts of the smaller air-tubes may be intermixed. A fluid sputum of dark reddish-brown or *prune-juice* hue indicates a low state of vitality, and is of unfavorable import. A greenish-gray, intensely fetid sputum, with shreds of necrosed tissue intermixed, is a sign of pulmonary gangrene. Needle-shaped crystals of the fatty acids are often met with in fetid and gangrenous expectoration. Ciliated epithelium, when found in the sputum, usually comes from the nasal passages. Columnar epithelium, the lining of the air-passages, is not readily detached, and therefore not commonly found on microscopic examination of the sputum.

Before proceeding to the physical examination of the heart itself, note should be taken of any visible pulsation of arteries or veins about the body, and then the fingers should be placed on the radial artery at the wrist.

The pulse, in a healthy adult beats at the rate of 60 to 80 times per minute, the average being 72; in fever its frequency varies from 80 to 150. A pulse of 140 indicates high fever, and is of grave prognosis. Above this rate the pulse becomes very small and thready, and is then usually, in acute organic or zymotic diseases, the precursor of death.

It may here be noted that in exophthalmic goitre (Basedow's or Graves' disease) we may have a pulse of 150, though no fever is present. The cause of this unusual rapidity of the pulse is due to irritation of the sympathetic nerve. In young children, from one to ten days old, the pulse averages 101 to 102 per minute. In children of six the pulse usually ranges at 76 during sleep and 92 whilst awake. The pulse in a child varies much under exciting influences, and it is best to count the pulse of a young child, when possible, during sleep, when the circulation is free from nervous disturbing influences.

The rate of the pulse at the wrist is of some value in

guiding us to the diagnosis of certain diseases of the heart and blood-vessels. In acute affections of the heart, such as pericarditis and endocarditis, the pulse is always quickened. In chronic valvular diseases of the heart it will be noted that the pulse may be quickened in mitral valve lesions, while it is normal or subnormal in aortic valve disease. A very slow pulse sometimes accompanies atheromatous change in the coats of the aorta, and in cases of fatty degeneration of the muscle of the heart the pulse has been known to fall as low as 30 in the minute. Obscure nervous affections have been reported, associated with a pulse of 18 per minute, the heart itself being in every respect sound and healthy.

A feeble thrill, felt in the radial artery, with a pulse visible to the eye, and of a sudden, short, jerking character, though regular in rhythm, is quite certainly diagnostic of aortic insufficiency, with regurgitation of blood through the valves during the diastole.

A firm, resisting pulse, with a hard, rigid feel when rolled under the finger, is indicative of hypertrophy of the heart and more or less atheromatous and calcareous degeneration of the coats of the blood-vessels.

Visible impulse in the arteries is generally a sign of hypertrophy of the left ventricle. Hypertrophy of the right ventricle is not attended with this forcible and visible arterial impulse.

A pulsation of the jugular veins in the neck is sometimes observed independently of any impulse given to the vein by proximity to the carotid artery. This venous pulse is caused by the regurgitation of a wave of blood, during the systole of the heart, into the superior cava and jugulars. It most commonly depends on regurgitation of blood through insufficient tricuspid valves. This pulse, when thus caused, is most marked in the right jugular vein, and it may be seen reaching as high as the angle of the jaw.

Before quitting the subject of arterial pulsation, a few words more may be said respecting the radial artery at the wrist, or *the pulse*.

The regular or rhythmical action of the heart in health is subject to disturbance from various causes, under which the pulse becomes more or less irregular or arhythmical. Nervous disturbance or disorder of stomach and liver may be a cause of irregular action of heart and intermittent pulse. Disease of the valves of the heart, especially of the mitral valve, may produce

irregular action, and in old-standing valvular disease, when the muscle of the heart begins to fail, intermitting pulse may be the warning of this change. Sometimes the action of the two pulses at the wrists does not correspond, and then we may suspect an aortic aneurism, the circulation being delayed on the side on which the aneurism lies.

An aneurism may cause a delay between the cardiac systole and the arterial beat at the wrist. Stenosis, or narrowing of the aortic orifice, may produce the same results from the longer duration of the systole.

An intermitting pulse may be due to want of power in the ventricle to drive the blood to the radial artery, so that, after several regular strokes, one or two fail to be perceptible at the wrist. This condition is not incompatible with health, and is due to feeble contraction of the ventricle.

Increase of volume in the pulse depends on increased capacity of the blood-vessel, and on the power of the cardiac contraction. A small quantity of blood circulating in the arteries causes diminished pulse volume, and thus is produced the *tremulous* and *thready* pulse of extreme debility.

Extreme tension of the artery by blood causes a *hard* pulse, not easily compressed; the reverse condition of the weak, relaxed blood-vessel, a *soft* pulse. Hypertrophy of the left ventricle causes a hard pulse.

The pulse is *active, bounding,* and *rapidly receding* in cases of insufficiency of the aortic valves.

The dicrotic or double pulse is marked by a secondary beat, and it is caused by a recoil wave of blood from the closed aortic valves. When the tension of the artery is lessened, as in high fever, this after-stroke is often very marked. A pulse that is obscurely dicrotic is named sub-dicrotic. It is noticed in moderate degrees of fever, and, at times, dyspepsia.

The sphygmograph, an instrument for recording the differential features of the pulse in health and disease, is often of considerable value. In the sphygmograph a lever rises and falls with each beat of the radial artery, over which it is placed on the wrist, and by this rise and fall traces on smoked paper, fixed on a moving dial, the cardiac beat. The tracing shows that in health the line of ascent of all the arteries is upright and unbroken, and this line is traced by the contraction of the ventricle and dila-

tation of the arteries. Then comes the line of descent, which is broken and irregular, since the return blood-wave from the contracting arteries recoils on the closed aortic valves and a secondary dicrotic wave is generated by this shock.

When we find the pulse trace without any well-marked notch *before* the great secondary wave, and the line of descent forming an almost oblique line, it indicates *high arterial tension,* with full arteries and a hard incompressible pulse. On the other hand, when the line of descent falls suddenly, the arteries are insufficiently filled, and the pulse is soft and compressible.

Force of pulse gives high upstroke from throwing the lever of the sphygmograph well up. In old persons, where the volume of the blood-vessels is large, the trace shows great fullness.

The line of descent in the sphygmogram of a healthy pulse usually shows both the dicrotic and tricrotic recoil waves.

Tricrotism is due to a recoil wave from the capillaries, or to secondary contraction of the elastic vessel-wall.

The heart lies obliquely in the thorax behind the middle and lower bone of the sternum and the cartilages of the third, fourth, and fifth right ribs near the sternum, and the cartilages of the third, fourth, fifth and sixth ribs on the left of the sternum. The heart rests upon the cordiform tendon of the diaphragm; its base is on a line with the interval between the cartilages of the second and third ribs, and the impulse of its apex can be seen and felt between the fifth and sixth ribs, slightly to the left of the junction of the fifth rib with its cartilage, and on a line with the junction of the xiphoid cartilage and the sternum. The true apex lies behind the sixth rib, covered in front by a tongue-like process from the left lung.

Deep inspiration tends to lower the heart's apex, and, by distending the lung, weakens the force of the impulse. Expiration has the reverse effect. A full stomach raises the apex. Enlarged liver may push the apex upwards and to the left. All enlargements of the heart depress the apex-beat, and may carry it as low as the eighth rib. Effusion of fluid into the sac of the pericardium always raises the apex-beat. In children the apex of the heart may lie naturally as high as the fourth intercostal space. Effusion of fluid or escape of air into the left pleura will carry the apex-beat over to the right side of the chest.

The region of the heart's *superficial dullness* known as the

precordial region, corresponds to a vertical line through the center of the sternum. About the middle of the bone, nearly level with the cartilage of the fourth rib, the edge of the left lung separates from the middle line and passes obliquely to the left side, thus exposing a small portion of the pericardium in the form of a sort of triangle, the apex above, the base below. The parts of the heart uncovered by lung, and in contact with the thoracic wall, are a part of the left ventricle near its apex, and also a part of the right ventricle. A dull space is thus formed, which can be mapped out by careful and light percussion, and it will be found that its base is level with the cartilage of the sixth rib; its right boundary a vertical line through the center of the sternum, and its left boundary is an oblique line through the cartilages of the fifth and sixth ribs on the left side. The lower boundary corresponds with the lower border of the right ventricle. The heart, as a whole, extends vertically from the second space to the sixth cartilage, and transversely from a little within the left nipple to a finger's breadth or more to the right of the sternum. These are the limits of the *deep cardiac region*. The deep-seated cardiac dullness extends vertically from the third to the edge of the sixth cartilage, and transversely from the left nipple to a little beyond the right edge of the sternum, opposite the fourth cartilage. Difficulty is experienced in defining by percussion the boundary between the heart and the liver. The pitch of liver percussion is always higher than that of the heart, and sometimes a narrow line giving a tubular note can be defined between the two organs.

Alterations in the area of the heart's percussion dullness may be produced in various ways.

1. By effusion of fluid into the sac of the pericardium. This event may occur as part of a general dropsy, but is specially prone to happen as a consequence of acute pericarditis in the course of rheumatic fever.

Inspection may show arching of the precordial region, bulging of the interspaces, and elevation of the left edge of the sternum. The beat of the heart will have an undulatory movement, and the apex may be raised as high as the fourth interspace.

Percussion discloses increase of the precordial dullness, which can be made out in a triangular form, base below, apex above. This triangle of dullness may, when effusion is large, extend from

the right para-sternal to left axillary line, while the apex of the dullness reaches to the second left interspace. Upon these conditions the beat of the heart's apex will not be perceptible unless the patient lie flat on the back; then the apex may be again found as the fluid falls back by gravitation, provided the heart be not held fixed by adhesions. The more mobile watery fluid that is poured out in dropsy of the pericardium (hydro-pericardium, or hydrops pericardii) shifts about more freely than the more glutinous exudation of acute pericardial effusion. A bulging of the abdomen is sometimes noticed in cases of great pericardial effusion.

2. Cardiac dullness is increased in extent and intensity in hypertrophy and dilatation of the heart.

There may be a general hypertrophy of the whole heart in all its compartments, and in this case it is always, according to the experience of Walshe, of the dilated or eccentric kind. In such a case of general hypertrophy the cardiac dullness will be increased laterally and downwards, and the impulse diffused generally.

In cases of hypertrophy of the left ventricle, the thickness of the muscular wall may increase from the normal amount of half an inch to as much as two inches. The area of dullness is increased towards the left, and the apex beat may be found as low as the seventh rib, or when there is much dilatation as well as hypertrophy of the ventricle, even to the eighth rib. The impulse of the heart may also be felt in the back.

Percussion dullness in dilated hypertrophy may reach from the second to the eighth rib, and transversely one or two inches across to right of sternum.

The left ventricle is the compartment of the heart most commonly affected with hypertrophy; next in frequency comes the left auricle, and then the right ventricle; last comes the right auricle—a cavity which, however, has been found so much dilated as actually to displace the liver. In one case it contained eight ounces of blood clot.

In hypertrophy with dilatation of the right ventricle, it is chiefly the transverse area of cardiac dullness that is increased. The impulse of the heart is not so strong and heaving as in dilatation of the left ventricle, and passes further to the right than is normal. It may extend to the right mamillary line. There may

be some bulging of the lower part of the sternum. Where the enlargement of the ventricles of the heart is due to simple dilatation, without notable hypertrophy and thickening of the muscular wall, there is not seen any prominence of the cardiac region. The apex-beat is diffused and not distinctly seen, the force of the impulse is unequal and the rhythm irregular. With these signs there is good reason to suspect fatty infiltration, or even fatty degeneration, of the muscular tissue of the heart's wall, and this opinion is confirmed if there be symptoms referable to the brain in the form of vertiginous and apoplectiform seizures.

In hypertrophous dilatation of the heart's cavities the walls are thickened and the power of action increased.

In simple dilatation the thickness of the cardiac wall is very slightly augmented, but the capacity of the cavity is increased.

In passive dilatation the wills become very thin and attenuated, and here the intensity of superficial cardiac dullness is less than in the hypertrophous form of dilatation.

Dilatation carried to any extent involves both ventricles, but sometimes it is limited to the right ventricle.

The apex-beat in general cardiac dilatation is not readily pointed out; it may fall nearer the sternum than the natural point in consequence of the rounded-off form which the heart assumes when dilated. The area of percussion dullness is notably increased in the transverse more than in the vertical diameter. Whenever the heart is being examined by percussion, the patient should lie flat on his back and on no account move his limbs or shift his position during the examination.

In health the contraction of the heart gives rise to two sounds with a short pause between them. The first of these is the *systolic* sound, and is synchronous with the *systole* or *contraction* of the ventricles. The second, *diastolic,* sound marks the beginning of the *diastole* of the heart; then follows the cardiac pause, which lasts till the next systole. The first, systolic, sound, is more clearly accentuated at the apex of the heart and over the lower border of the sternum than is the second, diastolic, sound, which has its point of greatest intensity at the second intercostal space, close to the sternum.

The first sound of the heart is of a mixed character, one of its causes being *tension of the auriculo-ventricular valves,* due to the shock of the mass of blood thrown against them during the

cardiac systole. The sound produced by the action of the heart agaist the chest wall is too slight in the normal state of things to be audible to the listener, but when the heart is a little enlarged, or temporarily excited, then a sort of rub is heard with the systole, which probably soon subsides under the influence of rest. The prolonged booming character of the first cardiac sound has been held since the days of Laennec to be due to the act of muscular contraction.

The *second* sound of the heart is produced by the recoil of the blood upon the surface of the sigmoid valves, together with the sudden tension of these valves.

To appreciate the varying character of the heart sounds at different points of the chest is very difficult, but very necessary, as the basis of observation on the organ in disease. At the left apex of the heart the first sound is dull, prolonged and strongly accentuated. The second sound is but half as long as the first, clear, abrupt, short and of high pitch. Moving across to the right, the stethoscope will come over the right ventricle, and here the first sound is clearer, shorter, and less accentuated than it is over the left apex-beat. The right ventricle has thinner muscular walls than the left; hence its systolic sound is shorter. At the base of the heart, or level of left and right second interspaces, the first sound is dull and without accent. The second sound is accentuated both to right and left, but chiefly at the right side.

In listening for morbid sounds connected with valvular disease of the heart, it is found in practice not always best to place the stethoscope exactly over the anatomical site of the valves we are investigating. Thus sounds emanating from the *mitral valve* are not sought directly over the valve, the attached border of which lies on the level of the union of the third cartilage with the sternum, but lower down at the apex of the heart, where no lung intervenes.

Sounds connected with the *tricuspid valve* are heard best at the lower part of the sternum.

Pulmonary valve sounds are most clearly conducted over the anatomical site of the opening of the vessel at the sternal insertion of the third left costal cartilage.

Aortic valve sounds are loudest not just over the vessel, in *left* intercostal space, but in the second *right* space in the direction of the ascending aorta.

Enfeeblement of the sounds of the heart may proceed from a great covering of fat over the chest. Pathologically, weakness of the first sound is noticed in the debility of convalescence and in the course of some acute diseases; also in fatty degeneration of the muscle of the heart and in cardiac anemia or bloodlessness, often a precursor of fatty degeneration, the sounds are weak. In true fatty degeneration the first cardiac sound is weak, short, and relatively high pitched; then comes a long first silence and a feeble, but reltatively distinct and accentuated, second sound (Walshe). If, as often happens, the fatty change be in excess in the left ventricle, the first sound may be of notably fuller tone on passing to the right. Attacks of syncopal or of apoplectiform nature often attend these cases of fatty heart. The presence of the *arcus senilis* in the eye, due, as Canton has shown, to fatty atrophy of the cornea, is of some value as corroborative evidence of fatty heart if the patient be not far advanced in years.

Softening of the muscle of the heart and acute fatty necrosis of its fibers are apt to take place in typhoid and typhus fevers, and especially in those cases where the patient has been much weakened by any hemorrhage.

Pericarditis, or inflammation of the tissue of the pericardium, is known in an acute and chronic form. The disease passes through five stages: (1) Dryness and vascularity, (2) plastic exudation, (3) liquid effusion, (4) absorption, (5) adhesion of the two layers of pericardium.

It is exceedingly rare to find inflammation of the pericardium appear as a solitary disease, but it may be developed in the course of a variety of diseases, and especially during rheumatic fever, and next to that during the later stages of Bright's disease of the kidney. It has appeared as an idiopathic affection in very poorly nourished children, friction sound being remarkably well developed.

The essential auscultatory sound of pericarditis is a friction or rubbing sound; with this there is more or less increase in percussion dullness, some tenderness and twisting upwards of the cardiac apex.

Pericardial friction is usually best heard just above left nipple or behind the sternum, increased by pressure of the stethoscope, and continuing when the patient stops breathing. The clicking, grazing or rubbing sound may accompany both systole and dias-

tole of the heart or either singly, and the sound appears as if produced just under the surface. Friction of the grazing kind may vanish entirely in as short a time as six hours, and that without the occurrence of any liquid effusion. The cause of the friction sound is the roughening of the surface of the pericardium by plastic lymph exuded upon it. When this is quite recent, a *grazing* friction is heard; when more chronic, the sound becomes *rubbing, grating* or *creaking* in character. Generally, when we cease to hear the friction sound, it is because fluid is poured out, and so the two layers of pericardium are separated the one from the other. As fluid increases, the heart sounds become muffled and weak, and the percussion dullness assumes the form already described. It is remarkable that the friction sound is not necessarily abolished as fluid effusion comes on, for in a case recorded sixty fluid ounces of liquid effusion were found in the pericardium of a man over whose heart friction murmur was distinct a few hours before his death.

There are a few points in the diagnosis of pericardial friction sounds worthy of attention. A friction sound produced by inflammation of the left pleura may be of cardiac rhythm, and so confuse the observer. Pleural friction sound is increased by deep breathing, and ceases when the act of breathing is suspended. An *exocardial* friction murmur is distinguished from an *endocardial* murmur, due to valvular disease, by the changeableness of its seat and intensity from hour to hour, its superficial and limited character, and its non-transmission in the course of endocardial murmurs further serve to mark the exocardial sound of inflamed pericardium.

The endocardial cardiac murmurs are (1) inorganic, (2) organic. These may be of *systolic* or *diastolic* rhythm, and when of the first, the murmur may be inorganic and significant then of a spanemic and weak state of the blood, or of coagulation of blood in the heart's cavities. A murmur of diastolic rhythm is never inorganic. A systolic inorganic murmur is soft and gently flowing, basic in seat, and usually best heard over the pulmonary orifice at the second left or "pulmonary" cartilage. This inorganic murmur can also be heard over the orifice of the aorta, but it is not conducted up the vessel, nor can it be heard outwards towards the axilla or down at the cardiac apex. It is rare to hear an inorganic murmur at the mitral orifice, but unequal tension of the

valve segments, it is said, may cause such a transient murmur. Murmur due to coagulation of blood is most common on the right side of the heart. The coagulation of blood, or *intra-cardiac thrombosis*, is prone to occur as a very serious complication in rheumatic fever, croup and pneumonia. Extension of percussion dullness to right and irregular action of heart with murmur marks the event. It must be remembered that inorganic systolic base murmur is not uncommon in many acute diseases when the blood becomes poor and thin.

Venous murmurs are best heard in the external and internal jugular and subclavian veins. These "humming-top" murmurs are invariably continuous in rhythm, and are at once silenced by pressure on the vein with the stethoscope. A thin anemic condition of the circulation is the most probable cause of the existence of these humming venous murmurs.

In inflammatory endocarditis, so often met with in the course of acute rheumatism, organic cardiac murmurs may be thus arranged in their order of frequency: Aortic obstructive, mitral regurgitant, aortic regurgitant, aortic obstructive and mitral regurgitant, and aortic obstructive and regurgitant together. Pulmonary murmurs are infinitely rare. Surface-roughness, fissuring, and lymph deposits are the main causes of the obstructive class of murmurs; while those of regurgitant character may be traced to intertwined lymph impeding the play of the tendinous cords and papillary muscles. An endocardial murmur early developed under observation during an acute attack, is pretty good evidence of endocarditis, and if it be observed to persist all through the acute attack, it will probably remain as a permanent condition; at any rate, if some months after the attack it be not audible, owing to weak action of the heart, a little extra effort on the part of the patient, by exciting the heart, will soon show whether it be really gone or not. Recent endocardial murmurs of soft tone have been known to go quite away after continuing two or three weeks. The disappearance of the murmur in these instances has been set down to the absorption of a recent lymph exudation on one of the cusps of the mitral valve.

The murmur of aortic obstruction, constriction or stenosis, is produced by the onward current of blood meeting with obstruction at the seat of the aortic valves. The pulse is not materially affected unless the aortic constriction be great, then, though reg-

ular in force and rhythm, it becomes small, hard and prolonged, and this shows that there is some hypertrophy of the left ventricle forcing the blood powerfully into the arteries through the aortic obstruction. Constriction of the aortic orifice does not *per se* cause any swelling of the ankles, or dropsy. The murmur indicative of aortic constriction and obstruction may be so prolonged as to cover not only the first, but also the second sound at the base of the heart, but this is not common; what we usually hear is a murmur whose point of greatest intensity is at midsternum, opposite the third interspace, gradually losing force as we pass to the apex, where it may be quite inaudible, so that we hear the natural sounds of the heart at this point. The murmur is audible at the second right cartilage, faintly so at the second left, and it can be heard on the left vertebral groove, and up toward the vessels of the neck, being carried in the direction of the blood-current. Usually this murmur is high in pitch, loud, prolonged and harsh. Occasionally the second sound is reduplicated at the base.

A systolic onward murmur, of maximum force at or just outside the apex-beat, faintly or not at all audible at ensiform cartilage at the base of the heart, but clearly heard in left axillary line and round to inferior angle of scapula, is due to regurgitation of blood through the mitral orifice at the moment of ventricular systole, into the left auricle of the heart. This murmur is seldom of high pitch; it may entirely cover the first sound of the heart at the apex, but this sound may be quite natural at the base of the heart, and just to right of ensiform cartilage.

The second sound of the heart, usually in health most accentuated over the aortic valves, is in mitral regurgitant disease most accentuated or intensified over the pulmonary valves. The reason is that the left auricle and pulmonary veins being over-distended with blood, the right heart has to act with greater force, and hence increased pressure falls on the pulmonary valves. Sometimes the second sound is notably distinct and sharp at the apex.

A transient mitral systolic murmur is met with at times in the course of chorea, and seems then to be produced by irregular or convulsive action in the musculi papillares.

The pulse in mitral regurgitation is variable. In slight cases it may be fairly natural, in other cases it is irregular in force and rhythm.

Dilated hypertrophy of the left ventricle is the common se-

quence of mitral regurgitation. The systemic system of vessels is not soon affected, and we do not therefore see any dropsy unless the dilatation of the heart has become general. The stress of mischief falls on the pulmonary circulation, so that we get cough with watery expectoration, dyspnea, pulmonary edema and apoplexy among the results of prolonged mitral regurgitant disease. The liver also becomes eventually liable to congestion, as also the kidneys, and if the heart becomes much dilated we may find albumin in the urine.

Mitral constriction or stenosis is evidenced by a thrill or tremor, perceptible by the fingers applied over the cardiac apex, and by a murmur of diastolic rhythm loudest just above the heart's apex, and not audible posteriorly, and the lower angle of the left scapula. This murmur, at first feeble and soft, may towards the end of the diastole be rough and grating in character. Sometimes, in cases of narrowing of the left auriculo-ventricular passage, no murmur is audible over the apex of the heart at the beginning of diastole, immediately before the systole; it is then recognized as a *presystolic murmur*. Very commonly mitral stenosis is complicated with mitral insufficiency; then the presystolic murmur passes into the systolic murmur indicative of mitral regurgitation. Pulmonary congestion and hemoptysis are among the frequent results of mitral stenosis, the second pulmonary valve sound becoming intensified, and the right ventricle of the heart dilated and hypertrophied.

Tricuspid-valve murmurs are very rare. A systolic murmur, most distinct over the lower part of the sternum, systolic pulsation of the jugular veins, and sometimes enfeeblement of the second pulmonary valve sound from lowering of blood-pressure, are the signs which indicate regurgitation of blood through the tricuspid valve.

A diastolic murmur over the lower part of the sternum, and presystolic pulse in the jugular veins, would indicate the exceedingly rare condition of tricuspid stenosis.

Aortic valve insufficiency is known by the presence of a diastolic murmur, loud and of maximum intensity over the greater part of the sternum. Usually the first sound also is murmurish, owing to the roughness of the aortic valves. By applying the finger over the subclavian or carotid artery during auscultation, the diastolic rhythm of this murmur is appreciated.

Owing to the reflux of blood in the diastolic back into the left ventricle, this cavity tends to enlarge and elongate, so that the visible apex beat is carried downward and to the left. The murmur, however, is usually louder at the ensiform cartilage than at the apex of the heart.

The pulse is jerking, rapidly receding from the finger and usually very visible, especially when the arm is raised. This visibility of the radial pulses is not, however, peculiar to cases of aortic regurgitation, for it is sometimes found in association with the gouty diathesis.

A diastolic murmur, most marked in the second left intercostal space, might show constriction of the orifice of the pulmonary artery, and is especially associated with hypertrophy of the right ventricle.

Aortic aneurisms give rise often to systolic murmurs and tactile thrill. With these signs we have local bulging, neuralgic pains, and distended veins as results of pressure. Aneurisms of the aorta lead to hypertrophy of the left ventricle when, as is usually the case, the aortic valves are at the same time insufficient. Should these valves remain competent to close the aortic orifice, there need be no ventricular hypertrophy.

Aneurism of the aortic arch is known from an enlarged heart by the fact of there being in the case of aneurism two distinct centers of pulsation—one of the heart, the other of the aneurismal tumor.

Of tumors likely to be confounded with aortic aneurism, it may be remarked that *infiltrated cancer of the lung* produces no local prominence, deepens the intercostal spaces, and does not produce pressure signs.

A syphilitic tumor, or *pulmonary syphiloma,* would be influenced more or less by mercurial remedies.

Mediastinal tumors often closely resemble aortic aneurisms. Common features are dullness and non-resilience, usually extending across the middle line. The conditions in favor of aneurism would be: situation in the course of the arch of the aorta; vibratile thrill; marked accentuation of the second sound over the prominence; gradually increasing nearness of pulsation to the surface; double impulse; dysphagia, and gnawing boring pain over spine or sternum.

Aneurisms of the descending aorta give murmur loudest

over the sac, and, by pressure on the bronchus, weak breath-sound in the corresponding lung. Shooting pains like rheumatism are prominent features in some cases. These aneurisms often rupture into the esophagus, or into the right or left pleura; then collapse and death rapidly occur.

The abdomen is divided anteriorly into the epigastric, umbilical and hypogastric regions, taken in order from above downward. The lateral regions on either side are divided into right and left hypochondriac (that is, lying under the rib cartilages), right and left iliac, and right and left inguinal, or groin regions. The posterior regions embrace the inferior dorsal on the right and left, and the right and left lumbar regions.

In the epigastric region lies the stomach, its lower border or larger curvature crossing the epigastrium in a curved line situated nearly midway between the point of the ensiform cartilage and the umbilicus. A small portion of the anterior surface of the stomach and the larger part of its great curvature, are in direct contact with the abdominal parietes anteriorly; the rest of the organ is covered over partly by the left lobe of the liver and partly by the left lung.

In examining the stomach the patient must lie on his back and the upper limit of the stomach defined by percussion along the line where the resonant pulmonary note gives place to the tympanitic stomach-note. The boundary of the stomach to the right may be determined by following the dull liver-note till this ends in the lower margin of the cardiac dullness. The definition by percussion of the lower border of the stomach is not easy, because there lies just below it the transverse colon, which commonly gives, on percussion, a tympanitic note like that of the stomach. Enlargement of the tympanitic space occupied by the stomach indicates dilatation of the organ—a condition commonly found in gastric catarrh and in stricture of the pyloric outlet. When much dilated, the stomach has been known to extend far over the middle line to the right, and beyond the left axillary line.

Cancer of the stomach, which most frequently affects the pyloric end, manifests itself externally as a circumscribed elevation or tumor in the epigastrium, hard and firm to the feel, and more or less tender. Cancer of the left lobe of the liver will produce a similar elevation of the epigastrium.

A pulsating tumor in the epigastrium to the left of the spinal

column would be suggestive of aneurism of some part of the abdominal aorta, but it must be remembered that in persons of hysterical or gouty temperament violent pulsation of the abdominal aorta is at times met with of a purely nervous character. The aneurismal tumor has an expansive movement under the fingers, and is usually the seat of a systolic murmur.

In the right hypochondriac region lies the liver, occupying the concavity of the diaphragm with its upper convex surface, while that portion of it which is in contact with the thoracic and abdominal wall extends on the front of the chest from the sixth rib superiorly to the margin of the arch of the ribs inferiorly, and reaching in the median line to midway between the base of the ensiform cartilage and the umbilicus. To the left of the median line it is scarcely possible to define the upper limit of liver dullness as it merges into that of the heart.

In the right axillary line, or line falling from the center of the axilla, the upper margin of hepatic dullness corresponds to the seventh intercostal space. In the right dorsal line, falling from the lower angle of the right scapula when the arm is dependent, hepatic dullness corresponds to the ninth intercostal space. This posterior dullness extends downwards to the twelfth rib, where it merges in the dullness of the right kidney.

After deep inspiration the lower margin of the liver may be depressed from half to one inch below the margin of the ribs when the patient stands erect. The under surface of the liver is opposed to the stomach and large intestine and the right kidney and suprarenal capsule.

The liver is proportionately larger in infancy and childhood than in adult life. In the adult the average weight of the liver is one-fortieth of that of the entire body, whereas, previous to puberty, it may be as much as one-thirtieth, or even one-twentieth.

In cases of rickets the liver is often depressed and elongated from lateral compression. Tight lacing is another well-known cause of depression and apparent enlargement of the liver. Fluid collected in the right pleura, and, more rarely, in the pericardium may also depress the organ. When the liver is depressed by a pleural effusion its lower margin is not changed by very deep inspiration.

It may be here remarked that before pronouncing any opinion as to the nature of an abdominal tumor, it is well that the

bowels be well cleared out, for hardened collection of feces in the various parts of the colon have been mistaken for all manner of abdominal tumors. Hardened scybalæ in the transverse colon have been mistaken for the nodulated edge of a cancerous liver.

Congestion of the liver from excess of blood therein will produce a general and uniform enlargement of the organ, so that it may project an inch or more below the ribs in the right mammary line. The enlargement may be due to venous mechanical congestion from valvular cardiac obstruction, and in such case sooner or later it will give way to the opposite condition of contraction. The pressure exercised by the distended hepatic veins causes atrophy of the central portion of the lobules, and so causes a granular condition of the liver; different, be it remembered, however, from the contraction of the cirrhosis, where the atrophy commences at the circumference of the lobules.

In active hepatic congestion, where the engorgement commences in the arterioles, the enlargement is less marked than in the mechanical form of the disease.

In hepatic congestion there is a feeling of painful distension in the region of the liver, the surface of the enlarged organ is smooth, and usually in a day or two the conjuctivæ become yellow, and more or less of a jaundiced hue tinges the skin, while the tongue is furred and the stomach irritable.

When the enlargement of the liver is due to an obstruction, however caused, of the biliary duct, jaundice is a marked symptom; the stools are white and free from bile, while the urine is dark and bilious looking.

Abscess of the liver, whether due to pyemia or to dysentery and long residence in a hot climate, will cause a very painful swelling of the liver. Often the organ enlarges upwards, and the abscess may burst through the diaphragm and pus be coughed up from the lungs mixed with more or less blood. Shiverings, great pain on pressure, and on movement from side to side, and the general history of the case, point to abscess as the cause of the hepatic enlargement.

In waxy or lardaceous enlargement the liver undergoes greater enlargement than from any other disease except cancer. A lardaceous liver has been known to weigh 180, instead of the normal 50 or 60 ounces. On palpation the enlarged liver is felt ex-

tending below the ribs as a dense, firm, resisting mass. The outer surface is smooth, and the lower margin rounded and free from indentation. The smoothness of the edge distinguishes this form of liver disease from cancerous or syphilitic affection of the organ.

In waxy enlargement of the liver there is rarely any jaundice or ascites, and other organs, as the spleen and kidneys, are usually affected with the same waxy change that affects the liver. Protracted suppuration of some part or other of the body is the common cause of lardaceous disease of organs.

Fatty liver, like the preceding, is an example of a painless enlargement of the liver. The extent of overgrowth in the size of the liver may extend nearly to the umbilicus. The ribs are not bulged, and the surface of the liver is smooth and its margin even and rounded. Jaundice and ascites very seldom are found in connection with the fatty liver. The skin looks very bloodless and has a semi-transparent waxy appearance. Fatty liver is common in cases of advanced pulmonary phthisis.

Hydatid tumors constitute another cause of painless enlargement of the liver attended with very little constitutional disturbance. The tumor may attain a great size, is smooth, painless, and free from irregularity. If there be several cysts then the organ may have a lobulated feel and appearance. If the case be very obscure, a cyst may be punctured and an alkaline fluid abounding in chloride of sodium can be withdrawn, in which the microscope will reveal echinococci or shreds of hydatid membrane, thus making clear the nature of the case.

Cancer of the liver may be secondary to cancerous disease of the pylorus. The enlargement of the liver is great—a cancerous liver has been known to weigh 250 ounces—and if the cancerous growths press on the common bile duct, persistent jaundice will be the result, as has been observed in many instances. The enlargement is progressive, and in the softer forms of cancer may be so rapid that a weekly increase of growth may be noted. To the feel the enlargement is usually irregular, but sometimes the cancer is gathered into one large central mass, and the disease may be confined to the left lobe only. The tumors are always more or less tender on pressure, and sometimes the general outline of the liver is tolerably regular. This occurs when the cancer is of the infiltrating rather than of the nodular

variety. Jaundice and sometimes abdominal dropsy (ascites) are symptoms in hepatic cancer.

Contractions of the liver are observed in cirrhotic contraction of the organ and in acute yellow atrophy of the liver. Marked diminution of the area of the normal hepatic dullness with ascites distinguishes the first of these states, and acute jaundice and fever are concomitants of the second, much rarer, form of atrophy.

Ascites, or abdominal dropsy, is a condition very important of recognition and requiring distinction from pregnancy, ovarian dropsy, and some other forms of abdominal enlargement. The signs of ascites are these: (1) Enlargement and uniform swelling of the abdomen. (2) Percussion note dull in the flanks, whither the fluid gravitates as the patient lies on his back. In the center, where the intestines float up, percussion will yield a tympanitic note. (3) Fluctuation of the fluid is felt by placing the left hand flat on the side of the abdomen, and then tapping on the other side with the fingers of the right hand. With care even a few ounces of fluid in the cavity of the abdomen may be detected by this procedure.

Ovarian cysts are known, when in the early stage, by their appearing from one side of the abdomen, and the outline can often be defined by the fingers. As the cyst grows it ascends in front of the intestines, so that the prominent part of the abdomen is dull to percussion while the flanks are resonant, just the reverse of the condition met with in ascites.

In ovarian tumors the distance between the umbilicus and the crest of the ilium may differ on the two sides, being greater on the side from which the tumor has sprung. This never occurs in ascites.

The umbilicus does not protrude in the case of an ovarian tumor. Sometimes a coil of intestine crosses over an ovarian tumor or any other form of abdominal tumor, then a belt of tympanitic resonance will be found following the course of the intestine.

When ascites and ovarian dropsy co-exist, changing the position of the patient and observing the gravitation of the fluid will aid to clear up the diagnosis. Hydatid cysts usually grow from the liver, but the possibility of such a cyst originating in the pelvis and growing upwards must be kept in view. Puncture of

the cyst and examination of the evacuated fluid would be necessary to settle the diagnosis.

To feel or palpate the spleen the fingers must be thrust well under the margin of the ribs on the left side, while the patient draws a long breath. If the organ be slightly enlarged, it can then be felt as a smooth mass with a notch on its anterior and inner border. When very large, the spleen grows in direction downwards and inwards towards the median line. It is only when very large that the spleen extends upwards against the diaphragm. Tumors in the substance of the spleen are very rare; the enlargement generally maintaining the shape of the spleen, with its notches or indentations, which are very readily felt. The surface of the enlarged spleen is smooth and free from irregularity.

The acute diseases in which swelling of the spleen should be looked for are typhoid and typhus fevers, smallpox, relapsing and intermittent fever and pyemia. In old standing cases of ague the enlarged spleen is called the *ague cake*.

In general lardaceous or waxy disease of the organs of the body and in syphilis the spleen is often enlarged.

In *leukemia,* the disease in which there is excess of white blood corpuscles in the circulating fluid, enlarged spleen is constantly met with. The spleen can at times be moved about freely, in consequence of a lax state of its ligaments.

The anatomical relations of the kidneys prevent our being able, by percussion, accurately to define the extent of either of these organs.

Posteriorly the space included between the lower edge of the eleventh dorsal and the upper edge of the third lumbar vertebræ corresponds to the region of the kidney, and here it is covered by the mass of the sacro-spinalis and quadratus lumborum muscles.

When the kidney is much enlarged by distension with fluid, as in *hydronephrosis,* or with pus, as in *pyelitis,* it can be felt by the hand through the anterior abdominal wall as a soft fluctuating spherical tumor. If the pus or other fluid suddenly finds exit into the urine, the tumor of the kidney rapidly subsides.

The kidney appears sometimes, more often in women than in men, to become dislocated from its normal position and free to move, so that when grasped by the hand it slips from the fingers as a smooth, painless, bean-shaped body. To feel the

kidney thus the flank must be well grasped in the hand, the fingers being below and the thumb above.

In examining the course of the intestinal canal the hand may encounter masses of hard *fecal accumulations,* the recognition of which is very important.

This sort of tumors are usually felt on the right or left side of the abdomen in the course of the colon, as irregular, movable, somewhat tender masses. The diagnosis is made certain by noting the effect of purgatives and enemata in removing the accumulation. When there is a stricture of any part of the intestine, the peristaltic movements of the bowel can be seen and felt in the portion of the canal above the stricture. Large collections of fluid in the stomach and intestinal canal give rise to dullness on percussion, and gurgling, splashing movements on palpation by the applied hand. Gas in the intestine or stomach yields a more or less tympanitic note on percussion.

The diagnosis of stricture of the rectum and of fissure, piles, or cancerous disease of that part, is made out by examination with the oiled finger passed well up into the gut, and also by the use of the rectum bougie and the anal speculum.

Only when the uterus is enlarged can it be felt through the abdominal wall. At times firm sub-peritoneal fibroid tumors grow from the womb, and extend into the abdominal cavity, where they are felt as hard masses.

By passing the uterine sound into the cavity of the womb, it will be discovered that the abdominal tumor moves as the uterus moves, and this is a proof of their intimate connection. It may be observed that the passage of the metallic sound into the uterine cavity at times gives rise to discharge, much pain, and sometimes even peritonitis; hence, before using the instrument, the practitioner should study the method of its employment in some special work on uterine diseases. After its employment the patient should rest during the remainder of the day on sofa or bed.

By means of tactile examination of the uterus per vaginam, we ascertain if there be any hardness, irregularity or thickening about the os and cervix uteri. We further observe any undue heat, tenderness, weight and want of mobility about the uterus. By means of the sound passed through the cervical canal into the uterine cavity, we discover the length of the cavity, and whether the cervical canal be duly patulous and free from constriction.

The adult healthy uterus measures from the margin of the lip to the fundus nearly three inches, and its breadth between the two Fallopian tubes is about two inches or rather more. The length of the transvere chink or os uteri is from three-eighths to half an inch. The os, it may be observed, varies in form in different individuals; usually it is a transverse slit, but with some it is circular, and in others triangular—especially is it thus found in women who have born many children. It is generally about the size of a goose quill or rather smaller.

The cervical canal is from half to three-quarters of an inch long; it first widens then contracts again, where it enters the cavity of the uterus. The mucous membrane lining the canal of the cervix is disposed in rugæ, branching out from a center, and this has been called the arbor vitæ. In passing the sound, especially if it be a small one, care must be taken not to get the bulbous point hitched and arrested among these rugæ of the arbor vitæ.

The weight of the virgin uterus is from seven to eight drachms, but after child-bearing it amounts to an ounce and a half.

The lower portion of the uterus can be investigated by the finger per vaginam and examination with the vaginal speculum, which show any erosion or ulceration of the os or change of color, and through the speculum local applications to diseased parts can be made.

The ovaries are the essential organs of generation in the female, and are oval bodies, each about an inch and a quarter long, hanging loosely in the pelvis, and attached to either side of the uterus by the posterior duplicature of the broad ligament known as the ligament of the ovary.

To investigate diseased conditions of the ovary in an early stage, the intestines and bladder being emptied, the patient must lie on her back with knees drawn up so as to relax the abdominal muscles, and then pressure should be made backwards towards the brim of the pelvis from a point a little above the curve of Poupart's ligament. Swelling and tenderness of the ovary will thus be detected.

In pregnancy the uterus rises as a rounded tumor above the symphysis pubis about the fourth month. The abdominal enlargement increases uniformly, and when the gravid uterus

reaches the umbilicus, it pushes it forward, so that in the sixth and seventh month it is about level with the surrounding skin, and afterwards it projects beyond it in most women.

To the feel, the uterine tumor is well defined, firm, elastic, preserving its form in all positions of the body.

To hear the fetal heart pulsating and the whirring sound of the *uterine souffle* or *bruit placentaire,* the patient must lie on her back, and all disturbing noises, such as watches or clocks, be removed to a distance. The abdomen should be uncovered, and then the stethoscope placed on a line from the umbilicus towards the crest of the ilium, first on one side, then on the other; and it is usually on the left side that we succeed best in discovering the rapid, short, regular, muffled tickings that mark the fetal heart-beat. The number of sounds varies from 120 to 160 in the minute, and the earliest period of pregnancy at which they may be heard is the end of the fourth month. The fetal heart in the female is more rapid than in the male.

The *bruit placentaire,* or *placental murmur,* is heard in the second half of pregnancy; it is synchronous with the arterial pulse, and is developed in the dilated uterine arteries at the part where they terminate in the uterine veins.

PART II.

SPECIFIC MEDICATION.

CHAPTER I.

THE THEORY AND PRACTICE OF SPECIFIC MEDICATION.

It will undoubtedly be conceded that all agents employed as medicine must act either upon function or structure, and that this action to be curative must be opposed to the processes of disease.

If the action of a remedy is to oppose a process of disease, evidently its selection will depend, first, upon a correct knowledge of the disease, and second, upon a correct knowledge of this opposition of remedies to it.

It is a law of the universe that "like causes always produce like effects," or to reverse it, that "like effects always flow from like causes." Therefore, if we can determine the opposition of a remedy to a process of disease in any given case, we have determined it in all like cases. And to make use of this knowledge subsequently it is only necessary that we be able to determine the *exact* condition of disease, when we very certainly expect to obtain the *same* curative (opposing) action from the remedy.

In describing this action to another, it is necessary, first, that we so observe and group the signs and symptoms of disease that he may get the exact idea of the pathological condition to be opposed. The skill required is in diagnosis, and necessitates a very thorough re-study of pathology, ignoring to a great extent the ordinary nosology.

Part I of this work will facilitate this study, and serve as a basis for specific or direct medication.

Many persons are in error in regard to *our* use of the term *specific*. They think of a *specific medicine* as one that will cure all cases of a certain disease, according to our present nosology,

as pneumonitis, diarrhea, albuminuria, phthisis, etc.; and a person looking at the subject in this light, and guided by his experience in the use of remedies, would say at once there are no specifics.

We use the term *specific* with relation to definite pathological conditions, and propose to say that certain well determined deviations from the healthy state will always be corrected by certain specific medicines.

A disease, according to our present nosology, may be formed of one or of a half-dozen or more distinct pathological changes, bearing a determinate relation to one another. We do not propose to reach all of these by one remedy, except in those cases in which one lesion is primary and the others result from it. But, on the contrary, we propose a remedy for each pathological feature, using the remedy for that first which is first in the chain of morbid action, and that second which stands second, and so on.

As an example, we analyze a case of fever, and find it to consist of a lesion of the circulation, a lesion of innervation, a lesion of secretion, a lesion of the blood, and a lesion of nutrition; each of these is regarded as a distinct element of the disease, but in the order named—the one depending on the other to a certain extent. A remedy that will rectify the lesion of circulation will sometimes be sufficient to arrest the entire chain of morbid phenomena, as we notice in the simple fevers. Or a remedy that will correct the lesion of the blood—this being primary and the cause of the various morbid processes—will be a *specific* for all, as when quinine arrests an intermittent or remittent fever.

But in the severer types of disease we find it necessary to use a remedy or remedies for each pathological feature. Thus we employ one to correct the lesion of circulation, one to correct the lesion of innervation, special remedies to increase secretion, to correct the lesion of the blood, etc. Instead of one remedy to arrest the disease, according to the ordinary use of the term specific, we employ a number of different agents, which are none the less specific, for they meet distinct features of the diseased action.

To employ remedies in this way, it is requisite that we analyze the disease according to what we know of pathology, determining

definitely the elements that go to form it, and their relation to one another.

And secondly, that we know the direct influence of remedies upon the human body both in health and disease; that we use them singly or in simple combinations; that we do one thing at a time: that first which is first, that second which holds the second place, and so on.

But we go yet further into the analysis of diseased action as expressed by symptoms than many suppose. The success of direct medication comes from the definiteness of diagnosis—determining the *exact* condition of a function or part.

To illustrate, it is not sufficient in selecting a sedative to know that the pulse is frequent, using alike veratrum, aconite, digitalis, gelsemium or ferrum phosphoricum. Frequency is but one element of the lesion, and we have to determine in addition the strength or weakness of the circulation, the degree of obstruction of the capillary circulation, and the condition of the nervous system that controls this function. Thus, where there is strength with frequency we employ veratrum; medium strength with frequency, ferrum phosphoricum; feebleness with frequency, aconite; excitation of the nervous system with strength and frequency, gelsemium; atony of the nervous system and tendency to stasis of blood, aconite and belladonna; feeble impulse from the heart, with capillary obstruction, digitalis, cactus, cratægus, etc.

It is not sufficient to know that the tongue is coated, indicating an impairment or arrest of digestion. We make this secretion give us the history of blood lesions as well as of gastric and intestinal derangements. We learn that *pallid* mucous membranes with white coat demand alkalies; that *deep red* mucous membranes and brown coat call for acids; that a dirty-white, pasty coat requires the alkaline sulphites, etc. It is not necessary to continue this illustration further, for the reader will see by the above that *specific medication* requires *specific diagnosis,* and that it will be successful just in proportion as we become skilled in this.

It is true that almost any one can use veratrum and aconite successfully, for the conditions are so prominent that they cannot be mistaken; or any one may successfully prescribe aconite in sporadic dysentery from cold; ipecac in the diarrhea of children; collinsonia or hamamelis for hemorrhoids; collinsonia for min-

isters' sore throat; cactus for heart disease; pulsatilla for nervousness; staphysagria for prostatorrhea; eryngium aquaticum for cystic or urethal irritation; apocynum cannabinum for dropsy, etc., etc. These remedies have an extra value attached to them because the conditions indicating them are so easily determined.

In specific or direct medication specific diagnosis is an absolute necessity if we are to expect definite curative action from medicines. This is a very important element of specific or direct medication that many physicians do not seem to be able to understand. We must know exactly what the departure from health is, and knowing this we may select a remedy which will correct it. As was remarked in Part I, the physician must have first a thorough knowledge of *healthy* life, and be able to recognize it or any departure from it. Thus anatomy and physiology are the true basis of direct medication, for if we do not know the healthy structure and function, it is not possible that we can *know* the diseased structure and function.

We have a very simple rule for measuring the departure from health, and it is easily applied. It is in one of three directions —*excess, defect* or *perversion*—above, below, or from. If we can measure disease in this way, the desired remedial action is at once suggested; if in excess it is to be diminished, if defective it is to be increased, if perverted it is to be brought back to the normal standard. In a majority of acute diseases, we will find these departures so clearly marked that the diagnosis and treatment are very easy.

But as there are many elements that go to make healthy life in man, so there are many things that go to make the sum of disease. These will be found in varying combination, yet in most cases there are certain prominent lesions which may be regarded as standing first in the chain of morbid phenomena and upon which the others rest. If we can find remedies which will reach and correct these, the disease is at an end, and the natural restorative power of the body soon gives health.

The most simple form of specific medication is where a single remedy is sufficient to arrest the process of disease, as where we prescribe collinsonia for ministers' sore throat, drosera for the cough of measles, belladonna for congestive headache, macrotys for muscular pains, hamamelis for hemorrhoids, phytolacca for mammary irritation, cactus for functional heart disease,

staphysagria for prostatorrhea, etc. This use of remedies gives great satisfaction in the treatment of many diseases, and we are led to wish that the practice of medicine could be resolved into the giving of such specifics.

Not quite so simple, but yet very plain, is the second form of direct medication, illustrated by the following examples: A heavily loaded tongue at base, with a bad taste in the mouth and fullness in the epigastric region, demanding an emetic; a uniformly yellowish coated tongue from base to tip, relieved by podophyllin, kali sulphuricum, calcarea sulphurica, natrium phosphoricum, or leptandrin; a pallid tongue, coated white, calling for a salt of sodium; a pallid large tongue, with a moist, pasty coat, demanding the alkaline sulphites, say, sulphite of sodium; the deep-red tongue and mucous membranes with brownish coatings, demanding the use of acids, say muriatic acid.

Quite as plain, but not so easily and directly reached by medicine, is the need of a good condition of the intestinal canal for digestion and blood making, and associated with it the recognition of the need of certain restoratives that may be necessary to normal nutrition and functional activity. These are essentials in the treatment of every form of disease. In acute cases it is required first to rid our patient of functional disease before we can fully establish digestion and nutrition, but in chronic disease it will many times stand first, and must always be associated with treatment for local lesions.

A very important part of the management of such cases will be to employ such treatment as will increase the removal of old and worn-out tissues, and thus relieve the solids and fluids of material that must necessarily depress functional activity. Remedies that increase excretion are in common use and form a very important part of our practice. From the earliest periods of medicine the fact that disease is destructive has been recognized. Destruction of the material of our bodies necessarily leaves the débris either in solids or fluids, and experience has shown that it cannot remain in the body with safety. Hence the common use of those agents that stimulate excretion from the skin, kidneys and bowels. These processes are strictly vital processes, carried on by delicate organisms under the control of the nervous system. As they are the basis of life, we may well suppose that nature has guarded them on all sides, and that they are the true center

of life. A man lives because he has the power of renewing his life day by day. Take away this power and he will die in a brief time.

When we regard these processes as strictly vital processes, in highly developed organs, under the control of a most delicately adjusted nervous system, we will be in a position to use remedies to aid vital action. Studying the condition of the stomach and intestinal canal in this light, we will see how a direct stimulant, or tonic, an alkali, an acid, a remedy that will relieve nervous irritation, or one that will give increased innervation, will in different cases be an aid to digestion. Looking farther, we will see the necessity, in one case of histogenetic food, in another of calorifacient, in one of iron, in another of phosphorus, etc. It is just as much *specific medication* to be able to select the proper food for the sick as it is the proper medicine.

We must be thoroughly impressed with the fact that excretion is *wholly* a vital process, and not a process of straining; that a secreting organ is continually growing secreting cells, and that these withdraw from the blood the worn-out materials of our bodies. With these facts fully recognized, we will be in a position to use remedies with success. Evidently it is possible to so overstimulate or overwork an excretory organ that this function of cell-production will be very much diminished or altogether arrested. Just in this proportion must secretion be impaired or wholly arrested. The best remedies to increase secretion are those that act mildly and stimulate vital function.

Success in the practice of specific medication will be in proportion to the physician's acuteness of observation and knowledge of remedies. But beyond this we have a field that requires a very thorough knowledge of vital processes, accurate observation, and an extended knowledge of remedies. We study not so much the grosser manifestations of disease, but the more delicate shadings and combinations, and our therapeutics require that we have a most intimate knowledge of the influence of remedies upon the human body. In this field of study the physician will find a beauty and certainty in the practice of medicine that will give zest to investigation, and as it is pursued he will find greater and greater success.

We may lay it down as an *axiom* from which it is never safe to depart, that *no medicine should be given unless the patholog-*

ical condition and the indications for its use are clearly defined. It is much better to employ a *placebo* than run the risk of doing harm by medication.

Good nursing is an essential element in the successful practice of medicine, and always requires direction by the physician; keeping the stomach in good condition for the reception of food and medicine, is of first importance and requires attention. Following this is the selection of proper food, its preparation and the time for its administration. These alone very well repay the careful attention and thought of the physician, even if he cannot see an indication for the employment of remedies.

We make an analysis of the disease and divide it into its component parts before making a prescription of medicine. There are certain *basic* functions or conditions upon which all others rest, and which are essential to life. These demand our first consideration. Thus the *circulation of the blood,* the *temperature,* the *condition of the nervous system, waste, excretion,* the *condition of the blood, blood-making* and *nutrition,* are examined separately. Determining the lesion of these, we prescribe such remedy as antagonizes it and brings the function toward the healthy standard. Some one of them will stand first in the series of pathological changes, and will serve as a basis for others, and this will receive first attention. We thus prescribe first for that lesion which is first in the chain of morbid action. Then maintaining the influence obtained by a continuation of the remedy, we do that second which is second, and that third which is third, and so on.

In the cure of disease *time* is an important element, and it is never best to be in a hurry. As a rule, the more severe the disease the slower will be its development, and the slower the departure from health the greater will be the impairment of function and structure.

The manifestations of life in man are from a highly developed organism, the perfection of which is a work of time. Every manifestation of life necessitates a continued renewal of structure, requiring an expenditure of that force we know as vital. Therefore, when the manifestations of life are abnormal (disease), we must necessarily allow time for the development of the organism.

Usually it is best to change the manifestations of diseased life

slowly, giving sufficient time for the organism to adapt itself to the change, and gain increased strength as it returns to the condition of health. It will never do to suppress a process of disease at the risk of suppressing the organism upon which the natural function depends.

It has also been found wise to *effect these changes insensibly, or without shock to an organ or to the entire body*. In this, as in all other things, it is the slow but continued application of an opposing force that accomplishes the greatest results. Many thousands of sick have been hurried to their graves by large doses of powerful sedatives, administered by physicians in their efforts to quickly lower the temperature.

Remedies should be employed singly, or in *simple combination of remedies acting in the same way*. The reasons for this rule are obvious. It prevents random or scattering prescriptions. The dose should be the *smallest quantity that will produce the desired result*. The proper dose, or that which gives the best result, is very much smaller than one who has been used to the large doses of indirect medicine would suppose possible. It is difficult to decide just what the dose of a given medicine should be, but it is believed that the doses named in connection with remedies contained in this work are such as will prove the most efficient. The dose will, however, vary in different cases and with different practitioners. If it falls below the gross or poisonous action of the drug, it will have specific influence, and the diagnosis being right, will accomplish the object of the prescriber. Possibly the size of the dose does not make such difference as has been thought, and that the essential element of success is to get the *right* remedy.

In acute, and most chronic diseases, the examination and treatment should take the following order: (1) With reference to the condition of the stomach and intestinal canal—bringing them to as nearly a normal condition as possible, that remedies may be kindly received and appropriated, and that sufficient food may be taken and digested. (2) With reference to the circulation of the blood and the temperature—obtaining a normal circulation as regards frequency and freedom, and a temperature as near 98° as can possibly be secured without the use of depressants. (3) With reference to the presence of a *zymotic* poison or other cause of disease, which may be neutralized, antag-

onized or removed. (4) With reference to the condition of the nervous system—giving good innervation. (5) With reference to the processes of waste and excretion—that the worn-out or enfeebled material may be broken down and speedily removed from the body. (6) With reference to blood-making and repair —that proper material be furnished for the building of tissue, and that the processes of nutrition are normally conducted.

These are general outlines for the study of disease and the action of remedies in antagonizing it, and may aid in giving direction to our study and enable each one to make a classification of remedies for himself. A brief consideration of each one, with examples of the application of remedies, though it will be a repetition, may be of advantage to the student.

1. The condition of the stomach is of first importance in the treatment of disease. It must be in such condition that it will receive remedies kindly, and permit their speedy absorption, in order that they give us the desired results. Surely, it is not difficult to see the necessity of this, if we take no further view than to obtain the curative action of remedies. If the stomach does not receive a remedy kindly, is irritated by it, we cannot expect ready absorption or the complete curative action. If the stomach throws out its juices, which digest or decompose a remedy, we cannot expect its curative action. If the stomach is secreting mucus in large quantity, if it is in that condition in which it is but a receptacle or retainer, then we cannot expect the ready absorption of remedies, and will not get their curative action.

We are accustomed to specify two conditions of the stomach which may be tolerably easily determined by constant symptoms, and which should always be corrected. These are:

(*a*) *Irritation of the stomach,* marked by a reddened (bright) tongue, elongated and pointed, with sometimes reddened and erect papillæ. It is accompanied with unpleasant sensations of constriction, and tenderness on pressure over the epigastrium. There may be nausea, retching or vomiting; and in the severer cases, when prolonged, an irritation of the sympathetic, and finally of the spinal and cerebral nervous systems.

Its treatment takes precedence of everything else, for until removed we cannot expect the kindly or definite action of remedies.

The remedies employed for its removal are: Minute doses

of aconite; small doses of ipecac or hydrocyanic acid, or, better, a preparation of the bark of the peach tree. Rhubarb and bismuth are also often useful. These may be aided by the external use of a small amount of libradol, hot fomentations, or rubefacient application, and sometimes an enema to remove the torpor of the lower bowel.

But the reader may ask, "Why, if remedies are *specific,* name so many for the relief of so simple a pathological condition as gastric irritation?" The question is pertinent, and we will endeavor to answer it. Each of these remedies has a direct action in this condition, and each may be relied upon as a remedy. We choose the remedy, however, with reference to the association of diseased action, and in some cases one will be found best, in others another.

(*b*) The *atonic* stomach, with increased secretion of mucus, and sometimes with considerable accumulations. It is marked by the broad tongue, heavily coated at its base, bad taste in the mouth, and feeling of weight and heaviness in the epigastrium. The symptoms are distinct and cannot be mistaken.

When the condition is pronounced, in severer forms of disease, there is no means which will reach it so directly and speedily as an emetic. It needs to be prompt and thorough in action, not producing debility or leaving the organ irritable. It is better, however, unless they are absolutely necessary, to avoid emetics, for, as a rule, patients object to them. If the case is not severe enough to require an emetic, we may accomplish the same object by the use of the alkaline sulphites followed by nux vomica.

We have many minor lesions that cannot be classified under these, to which we will find single remedies specific. Thus in simple nausea and vomiting, without irritation, we prescribe nux vomica; in typhoid disease, with tumid mucous tissues, the baptisia; increased mucous secretion with irritability, minute doses of morphine (one-half grain to four ounces of water, given in teaspoonful doses as needed); imperfect gastric secretion, hydrastis; increased mucous secretion with impaired functional activity, minute doses of podophyllin, etc.

2. We recognize the fact that *just in proportion to the variation of the circulation and temperature from the normal standard is the severity and activity of disease.* The more frequent the pulse and the higher the temperature, the more active a zymotic

poison, the more rapid the progress of local or general disease, and the less able the body to protect itself or expel the cause of disease. The rule here is absolute and there is no variation from it.

In therapeutics we find that *just in proportion as the circulation and temperature can be brought to (by means which are not depressant) and maintained at the normal standard, just in that proportion are the processes of disease arrested and vital processes re-established.*

If we take as an example a case of fever, we will find that remedies that will reduce the pulse to a normal frequency, giving freedom to the circulation, will reduce the temperature, and that just in proportion as this is accomplished the febrile symptoms disappear and the various vital functions are re-established. If we can maintain the circulation and temperature at this point without the use of depressants the fever must certainly cease.

In acute inflammation the rapidity of the local disease and destruction of tissue are in the ratio of frequency of pulse and increase of temperature. Just in proportion as we get a normal circulation with reference to frequency and freedom and diminished temperature, just in that proportion the inflammatory process is arrested.

In *asthenic* inflammation we find another element in the pathology of the disease—a want of vital power, either in whole or in part. This must be antagonized by appropriate remedies. In others there is a zymotic or animal poison which must be antagonized, destroyed or removed.

In chronic disease the law is just as absolute as in the acute. In disease of function or structure, with a pulse maintained constantly above 100 beats per minute, and a temperature above 100°, the patient must die. The disease, as a general rule, will run its course rapidly to a fatal termination just in proportion to the extent of this deviation.

Recovery from chronic disease never takes place until the circulation and temperature approximate a normal standard. In any given case the probabilities of cure are as the possibility of bringing and maintaining the circulation and temperature at the standard of health. The first evidences of amendment are announced by a diminution of frequency of pulse and a better circulation of blood, and by an equal temperature of the body, approximating 98°.

In very many cases the lesion of circulation is a *basic* lesion, upon which others arise and are continued. When this is the case the remedy that gives us normal circulation removes all the diseased processes which rest upon it. Thus we will find that arrest of secretion and excretion, lesions of innervation, of waste and nutrition, as well as the intensity of zymotic causes, are in proportion to the rapidity of the circulation. Conversely, as the pulse comes down to the normal standard, and the blood circulates freely, just in that proportion we have a restoration of the secretions and excretions, better innervation, better digestion and blood-making, and a more active waste and repair.

We have remedies that influence the circulation directly, giving a free and equal circulation, but they are active poisons in large doses, and death occurs in all by cardiac syncope. In the cases of veratrum, digitalis, lobelia and gelsemium, slowness of pulse is a prominent symptom of the poisonous action. In the case of aconite extreme frequency of pulse is produced by the poisonous action.

In medicinal doses (small) the influence of these remedies is that of a cardiac stimulant, and is undoubtedly through the sympathetic system of nerves, which controls the entire circulation of the blood—not only the action of the heart, but of all the blood-vessels to the most minute capillary. This influence removes obstruction to the free circulation of the blood, as well as gives power to the heart and muscular fiber of arteries. As obstruction to free circulation is removed it requires less effort to move the blood; as the power of moving the blood is increased there is less necessity of frequency of contraction upon the part of the heart.

As a rule, the time required to effect sedation will bear a distinct relation to the time required for the development of disease and its average duration. Thus in an acute fever or inflammation from cold the influence of the sedative may be promptly obtained and the disease speedily arrested. In continued fever the accession of the disease (in most cases) is slow in proportion to its duration and severity. Here there are grave lesions of function, possibly of structure, and we expect to obtain the influence of the sedative slowly.

Whilst each of the remedies named as arterial sedatives, aconite, veratrum, digitalis, gelsemium, lobelia, exert a direct influ-

ence in this direction, they are not equally valuable in all cases. The first two are pre-eminently the sedatives, their action being more definite and stronger and adapted to a larger number of cases. The special adaptation of each to special forms of diseased action is named in the description of the remedy.

The temperature bears such a constant relation to the frequency of pulse and general condition of the circulation that a remedy which will correct the one will usually correct the other. Thus we find in practice that just as we bring the pulse to the normal standard by the use of an arterial sedative, in the same degree we reduce the temperature. This is the case in chronic as well as in acute disease. For instance, in a case of phthisis we find a temperature of 101° associated with a pulse above 100 beats per minute; if it is possible to bring the pulse down to 80 the temperature comes down to 98° and a fraction. If this can be maintained without the use of depressants, we find a cessation of tubercular deposit and a reparative process set up in the lungs.

3. The field of therapeutics embraced in our third proposition is very large, and will well repay careful study. The presence of such blood poison as is referred to in this proposition is readily detected, and we have advanced so far in our knowledge of remedies that in many cases we can select the antidote with much certainty. We do not wish to be understood as claiming that we have any remedies that will immediately unite with all of a zymotic poison in the blood, destroy it, and at once restore health. Such an influence could not reasonably be expected. But we have remedies which, introduced into the blood, will antagonize the zymotic poison as it comes in contact with it, arresting its septic influence or wholly destroying it. In some cases they act rapidly, in others slowly, but in all, if properly selected, with great certainty.

The principal remedies of this class are the alkaline sulphites (sulphite of sodium being in most common use) and the mineral acids. The rules for the selection of the one or the other of these are quite simple and very definite:

In any given case presenting a pallid tongue, with white or dirty-white, pasty coating, use the alkaline sulphites.

In any given case presenting a deep-red tongue with brownish coatings, or deep-red glossy tongue and dark sordes, use mineral

acids. In some cases we employ sulphurous acid, but in the majority muriatic acid.

Of our indigenous materia medica we have two remedies that markedly possess these properties, and they possess them in a high degree. These remedies are echinacea angustifolia and baptisia tinctoria, and they may be usel in either of the cases named.

Prof. J. M. Scudder, in his "Specific Medication," speaks of acids and alkalies as follows:

"There is a *specific* use for acids in the treatment of disease, which we wish to study carefully. In any form of disease we may have an excess of the alkaline salts of the blood. This may be the basis of diseased action, or but a complication rendering it more intense, but whether the one or the other, it needs to be recognized and have direct treatment.

"The indications of excessive alkalinity are very plain and need not be mistaken by the youngest practitioner. The color of the mucous membranes is *deep red,* especially of mouth and tongue; the coating of tongue, sordes, or any exudative material, has a dark color, usually brownish. It makes no difference what the diseased action is, in its totality, or what it is called, the *deep red,* somewhat *dusky* color, always demands the administration of acids.

"There is but one exception to this, and that is a rare one, in which the excess is of sodium, but with a defect of potassium. In this case the administration of a salt of potassium will answer a better purpose than the acid, or may be combined with it.

"Muriatic acid is preferable in most acute cases, and should be used so diluted, and in such quantity, as to be pleasant to the patient, and until the indication for its use is removed. Lactic acid is sometimes preferable with children, and in some cases of chronic disease, especially when associated with indigestion. The vegetable acids may be used in acute disease, but are not so good as those named.

"It is well to consider the *specific* use of alkalies in this relation, as they are the opposite of acids. We may say of these, as of acids, that their deficiency is found as a constituent element in all forms of disease, in some cases being the basis of a morbid action, in others but a complication, but, whenever found, an important element and demanding direct treatment.

"The symptoms of deficiency of these salts of the blood are very plain. The tongue is pallid and broad, its coating pasty and white or yellowish-white. The mucous membranes are uniformly pallid. As these evidences are absolute and readily determined, it is not necessary to name others not so constant.

"Whenever we find this deficiency of the alkaline salts we will observe, as the result, loss of power in the stomach, enfee-

bled digestion and slow absorption, impairment of the circulation, arrest of nutrition and waste, and enfeebled innervation. These will correspond in degree to the deficiency.

"So marked are these results that I have long regarded the diagnosis, with regard to excess or deficiency of the alkaline salts, as of the highest importance. Indeed, in some forms of disease, especially of a typhoid character, it is the principal element upon which a successful treatment is based.

"Sodium is the natural salt of the blood, and exists in the body in the largest proportion. Whenever, therefore, we have the evidence of deficiency of the alkaline salts, and no special symptoms indicating others, we will give a salt of sodium. In many cases I order bicarbonate of sodium.

"If at the same time we wish an antiseptic influence we may give the sulphite or hyposulphite of sodium or the chloride of sodium.

"I am satisfied that I have seen patients die from deprivation of common salt during a protracted illness. It is a common impression that the food for the sick should not be seasoned, and whatever *slop* may be given, it is almost innocent of this essential of life. In the milk diet that I recommend in sickness common salt is used freely, the milk being boiled and given hot. And if the patient cannot take the usual quantity in his food I have it given in his drink. This matter is so important that it cannot be repeated too often or dwelt upon too long.

"The most marked example of this want of common salt I have ever noticed has been in surgical disease, especially in open wounds. Without a supply of salt the tongue would become broad, pallid, puffy, with a tenacious pasty coat, the effusion at the point of injury serous, with an unpleasant watery pus, which at last became a mere sanies or ichor. A few days of a free allowance of salt would change all this, and the patient would get along well.

"A salt of *potassium* is indicated where there is feebleness of the muscles to a greater extent than can be accounted for by the disease. Occasionally such want is expressed in a marked manner by feebleness of the heart.

"Ammonium will occasionally prove the best salt for temporary use, especially where there is great debility. But when so used it should be followed by the free use of common salt or some salt of sodium."

The reader will bear in mind that the activity of a zymotic poison is in exact proportion to the departure from normal function. With a rapid pulse, high temperature, and arrest of secretion, its development is rapid and its devitalizing influence marked. Or in the rare opposite cases of congestive intermittent fever and

cholera, as the circulation is enfeebled and the temperature lowered its progress is rapid.

Hence, in order to antagonize a zymotic process, it is necessary, so far as possible, to obtain a normal circulation and temperature. This proposition cannot be too strongly insisted upon. In a given case, the circulation and temperature being favorably influenced by aconite, ferrum phosphoricum or veratrum, sulphite of sodium exerts an immediate and marked controlling influence over the fever poison. Whilst if it had been given without such preparation it would have had no influence at all, or but slight influence.

Some causes of disease are destroyed and removed by remedies that increase waste and excretion. Preparations of potassium and sodium, especially the alkaline diuretics, act in this way. There are same organic remedies that exert a direct influence upon causes of disease, modifying or destroying them, as may be instanced in the action of phytolacca in diphtheria. This action, however, in the majority of cases is feeble.

Causes of disease acting in and from the blood are frequently removed by stimulating the excretory organs. Some are removed principally by the skin, others by the bowels, and others by the kidneys.

The cause of periodic disease plays a very important part in the diseases of some localities. Antagonize this cause and the disease ceases, or at least is very much modified. Quinine is a true specific, and may be taken as the type of these remedies. If the diagnosis is correctly made, and the system prepared for its administration, it will rarely fail, even when given in a single sufficient dose.

4. The human body is a complex structure, united in functional activity by a nervous system. As this exerts a controlling influence, its lesions form a very important element of the study of pathology. It is a wide field for study, and its cultivation will greatly advance medical science.

Those functions which we have been accustomed to speak of as *vegetative,* are associated together, and to some extent governed by the ganglionic or sympathetic nervous system. It comprises digestion, blood-making, the circulation of the blood, nutrition, and secretion and excretion. These are the essentially vital functions, in the performance of which man has life. If

they are properly performed, he has healthy life; if there is an aberration in either of them, one or more, he has diseased life.

Control and association of these vital processes being in the ganglionic system of nerves, we would naturally expect it to furnish the readiest means of reaching them and correcting their lesions. If there are remedies, then, that influence the ganglionic nerves directly, and through them the vital processes of the body, they must become our most direct and important therapeutic means. It is in this way that a large number of specific remedies act. The sedatives, aconite, ferrum phosphoricum, veratrum, gelsemium, and others, such as cratægus, cactus, belladonna, eryngium, phytolacca, hamamelis and pulsatilla, certainly produce their effects through it.

The association of the spinal cord with the sympathetic brings vital functions in relation with our conscious life, and through its superior expansion, the brain, adds suffering from disease. Conversely, mal-conditions of conscious life are reflected through this association and influence vital processes. It is, therefore, important to reach lesions of the vegetative life directly through the ganglionic system of nerves, and it is also desirable to control any disease producing an influence that might be extended from the cerebro-spinal centers.

5. Lesions of waste and excretion are elements of every disease. In some they form a principal part, in others in less degree, but in all they require to be estimated in diagnosis and therapeutics. They range themselves under the common classification of excess, defect, and perversion, and usually it is not difficult to determine their character and select means that exert a direct influence.

Constant waste is a necessity of life, as is constant removal of this waste. If the materials of the body are not broken down and removed as they have served their purpose, the body is old, imperfect, and has lost functional power to this extent. If the material is broken down and removed to the blood, but not carried out by the excretions, we will have an impairment of life from its presence in the blood.

Too rapid waste of tissue is sometimes an important element of disease, requiring care in diagnosis and the application of remedies.

A perversion in waste and excretion is a common element

of disease. In the breaking down of a protein body it passes through many phases, and in its metamorphosis it assumes forms that are noxious to life, if they have any degree of permanency or are in any considerable quantity. Lesions in *retrograde metamorphosis* are therefore to be estimated, and remedies which influence it become important.

Many causes of disease act in and from the blood. They are zymotic poisons, or animal matter undergoing change, and influence the blood and life in different degree, in proportion to their quantity, and especially in proportion to their activity in setting up the septic process. These may be antagonized or destroyed in many cases; in others the natural process of retrograde metamorphosis is stimulated, and they are transformed into urea and other innocuous bodies fitted for excretion by kidneys, skin and bowels. Means that increase the activity of these excretions are frequently sufficient for the removal of such causes of disease.

6. The necessity of regarding the nutritive processes during the progress of disease is now admitted by all physicians. The condition of the stomach and digestive apparatus is of *first* importance in all forms of disease, and its lesions demand *first* attention in our therapeutics. This is essential to the successful administration of remedies and the appropriation of proper food. The object is to place the digestive organs in good condition to receive and prepare food for admission to the blood; to furnish such material to the blood as may be necessary for its perfect organization, and for the renewal of tissue.

The first lesson in specific therapeutics is to learn that remedies are selective, and that when introduced into the circulation through the stomach they especially influence certain parts and functions, and that this action is unvarying. If we desire to influence the circulation of the blood we select a remedy that acts upon the circulatory system, and not one that acts upon other parts. The remedy should be selected with regard to the character of the lesion; if in excess, a remedy that will bring it down; if defective, a remedy that will bring it up; if perverted, a remedy that will correct the perversion. This cannot be called theorizing; it is clearly demonstrable in its premises and conclusions.

The second lesson in specific diagnosis and specific therapeutics is to determine the relative importance of these lesions. We want to know which stands first and serves as a basis—we might

properly call this the *basic lesion*—and then the relative importance of others which have grown upon it. For instance, many simple fevers and inflammations have as a basic lesion the disturbance of the circulation and the increase of temperature; arrest of secretion, loss of appetite, digestion and nutrition, depravation of the blood and derangement of innervation are based upon them. The disease may really *be* a very active and severe one, and yet rest so wholly upon the lesion of circulation that if this is corrected they all fade away and the patient rapidly convalesces. The special sedative, associated with the proper bath, becomes in these cases absolutely curative. We find cases, however, in which the lesions of circulation and temperature are quite as marked, and yet the sedative is not curative; in some cases, indeed, it is not sedative even. Let us take two very common cases illustrative of this:

A typical malarial fever gives us quite as frequent a pulse and exalted a temperature as in the case where the sedative alone was curative, but now we find it only preparative—the lesion of the blood is the *basic* lesion. We prepare the patient for the use of quinine, or in some cases give it alone, and the quinine is curative.

Again, a patient is suffering with acute fever or inflammation, the pulse quite as frequent, the temperature as high, and yet the sedative has no more influenec than so much water, unless it be to irritate the stomach. Here the lesion of the circulation and temperature is not the *basic* lesion. Suppose we examine the tongue and find it *pallid* with *white* coat, we say at once here is a lesion of the blood, a salt of sodium is required. We give it, and now the sedative acts kindly, or indeed it may not be necessary, simple bicarbonate of sodium lessening the frequency of the pulse more markedly than veratrum.

We find the same is the case where the symptoms point to the alkaline sulphites, muriatic acid, sulphurous acid, chlorate of potassium, phosphorus, iron, copper or natrium sulphuricum. If, for instance, in an endemic of typhoid fever, we find *deep redness* of mucous membranes, this being characteristic of the *basic* lesion —a want of acid—we find that muriatic acid becomes sedative, stimulant, restorative, increases secretion, checks diarrhea, stops delirium, indeed does all for the patient that we can wish. Most times we supplement it with other remedies acting in these

directions (such as echinacea and baptisia), but occasionally it is safest to trust to the acid alone.

Again, we find cases where the predominant affection is of the nervous system. For instance, the face is flushed, eyes bright, pupils contracted, increased heat of scalp, restless and sleepless, determination of blood to brain—gelsemium becomes our best sedative. Why? Because it quiets the irritation of the brain, and removes this, which is the *basic* lesion.

So it is in the opposite condition—enfeebled capillary circulation and tendency to congestion of the cerebro-spinal centers. The pulse may be quite as frequent, the temperature as high, secretions arrested, blood poisoning rapid, and yet sedatives are not sedative. Why? Because there is an underlying lesion. We must influence the vegetative system of nerves first, to restore capillary circulation, and then our other remedies act kindly. This needed influence can be secured by the administration of small doses of belladonna.

Our methods of diagnosis in obscure cases will be found in the following brief statement:

1. We have direct symptoms pointing to the seat and the character of the disease. In simple cases these symptoms are clear and distinctive; in obscure cases they are not, but they point the direction of investigation. If we have a single characteristic symptom, one that we have called *basic,* then, of course, our diagnosis is complete and the treatment definite.

2. By *differential* diagnosis we undertake to determine the location and character of disease by an analysis of the symptoms, seeing which of them are common to all of the supposed affections—which are undeniably special to a certain part or function —until we have found one or more that locate the disease and determine its character.

3. By *exclusion* we give the entire body an examination, determining the functions that are *rightly* performed, excluding these, until finally we have localized the lesion and have determined its character.

There is hardly a disease so obscure but that it may be accurately determined in this way, if proper care is used. Necessarily we must know our anatomy and physiology and the modern teachings of pathologists, then with caution and a right use of reason we can hardly fail.

Now, if we have determined such obscure disease, and we have had no experience and can find no treatment in our books, how shall we proceed? Very certainly as follows:

A drug is a remedy because it influences the part or function diseased. It is an indirect remedy when its influence is dependent upon the disturbance of some other part or function; it is a direct remedy when its influence is directly upon the part.

Now we have determined the functions that are changed, and the part affected, we think of those remedies which are known to exert a more or less direct influence on the particular part or function; knowing the character of their action, and the want of the diseased body, we adapt the one to the other. If the case is one new to us we may have to experiment, but the line of experiment will be a rational one and likely to lead to good results.

CHAPTER II.

THE STUDY OF THERAPEUTICS.

IN pursuing this study it will be well to constantly bear in mind: (1) That causes of disease act upon a living body, and that such action invariably impairs its life. (2) That causes of disease must be removed whenever it is possible to accomplish such removal without still further impairment of life. (3) That disease itself is a wrong in the life of the individual, and that it is as much a part of him as is healthy life at other times. (4) That disease is opposed by remedies which influence the organism toward a healthy or right performance of functions. (5) That remedies may be divided into two classes, namely, those which remove causes of disease, and those which restore vital processes.

In studying an individual drug we should secure such facts as we can obtain from published works and other sources in regard to it, and arrange them in accordance with the above classification—those which remove causes and those which restore vital processes. The mind very soon learns to separate them, and without our volition decide upon the merits of all statements made in regard to the remedy being studied.

As the process of analysis goes on, the mind not only dis-

cusses probabilities, but wants to know how the results have been obtained. In the case of a remedy proposing to remove causes of diseases, it wants to know *how* it is done. Is it a chemical influence, combining with and neutralizing the cause, or does it extract it, as in pulling a thorn, removing a decayed tooth or a sequestrum, or is some organism forced to its removal, as when we produce emesis, catharsis, diaphoresis, diuresis, increased combustion, etc.?

The study of therapeutics in this way soon vastly increases one's knowledge of the action of drugs. In many cases things that had been accepted as true lose their basis and are rejected, while other and more rational views take their place.

We begin this study by gathering together the materials at our disposal, analyze and weigh them as indicated above, and reach certain conclusions from the premises. We bring all our previous experience in therapeutics to aid us, and proceed to prove the truth of our conclusions by direct experiment.

The course of experimentation must vary in different cases, must, indeed, be varied in order to reach definite results, and in all cases must be conducted with care. We cannot jump at conclusions here. We are dealing with a living body and one which possesses recuperative power in an eminent degree. We should be making very great mistakes if we regarded everything that followed the administration of a drug as its direct result, and yet we are constantly in danger of making such mistakes. The judicial mind is an important element of success. Without prejudice we must weigh the evidence and compare it with our past experience and our present physiological and pathological knowledge.

It is well to know *how* remedies act—at least to a certain extent. We want to know whether the action of a remedy is topical or from the blood; and whether it is directly upon the affected part, or indirectly through its action upon other parts or functions. It is well also to know whether it influences the life directly by its influence upon the body, or indirectly by the body's action upon it for removal—whether in the present condition the remedy is an advantage to the life, or a toxic agent. The questions also arise: Is the action chemical? physical? vital?

The simple proposition, "disease is a departure from health," is followed by the pathological question, "in what direction is

this departure?" and this by the therapeutic conclusion that *a remedy is that which, "opposing" such departure, brings the part or function to a healthy standard.*

We want to know the action of drugs in *medicinal* doses upon the human body, not only so far as this action is elective for different parts, but also as to its kind.

If a drug is elective for the apparatus of circulation, innervation, digestion, nutrition, etc., we think of it as among the possible remedies in disease of these parts and functions. If it is elective for brain, spinal cord, lungs, stomach, bowels, kidneys, skin, serous membranes, mucous membranes, etc., we think of it as a possible remedy in diseases of these parts.

In direct or specific medication it is a first requisite that the drug influence the part or function which is diseased.

Secondly, we want to know the *kind* of action. What is the result of the administration of a drug? Is it excitant or depressant? Does it favor an increased circulation, innervation, functional activity, or lessen circulation, innervation or functional activity?

In prescribing for disease the questions come: What drugs will influence the particular part? What drugs will influence it in the direction of health? Disease is *wrong* life, the action of the drug is *opposed* to this, and looks to right life.

We propose to study the action of remedies on the living man, both healthy and diseased, as an important means of determining their action and use. Drugs influence the life—must of necessity influence it to be remedies. They influence the life in health as well as in disease, though this influence may not be so marked, owing to the greater power of resistance. In health the influence of a drug is of necessity disease-producing, for every departure from the healthy standard is disease.

If we want to know the elective affinity of drugs for parts and functions, we may give the drug to the healthy person. If we want to know the kind of action, we may use the drug in health. If we want to know the curative action of drugs, we are obliged to test them in disease, though the action may have been pointed out by physiological proving.

The method of "proving" is simple. The prover needs be in good health, and during the proving he should be careful that no outside or unusual circumstances are permitted to influence

the action of the drug. If a topical action is wanted, we use it in such form that absorption will be slow. If an action from the blood is wanted, the drug must be so prepared that its absorption will be speedy and with little topical action. It is well in some cases to use it by hypodermic injection, or obtain its endermic absorption.

The drug may be taken in the usual dose of *old* medicine at first. The mind must be entirely free from prejudice, and no anticipation of the kind or situation of action indulged in.

Say, for instance, we take podophyllum, finely powdered, grs. v. to x. in the morning on arising. We notice, first, an unpleasant sensation in the stomach, and our morning meal is troublesome, with a sense of fullness and weight. Following this is an unpleasant taste in the mouth, with gustatory sense impaired; saliva is increased in quantity, and is more tenacious; mucous secretion more abundant; tissue of mucous membrane is fuller, especially marked in tongue; slimy yellowish fur on tongue; fauces tumid. Then comes uneasiness in hypogastric region, with sense of fullness and need of stool; fullness and weight in region of bladder, and disposition to pass urine. And during the day a sense of weight in basilar brain, with some dizziness and loss of perfect command over the muscles. There will also be a change in the pulse, usually accelerated; increased temperature, 99° to 100°, and some change in the skin. Finally, if the medicine has sufficient influence, a stool which is changed in character.

This shows the localized influence of the drug, and the kind of influence in toxic dose, and will aid in pointing out the probable curative action. We take podophyllum because it is a drug with which many physicians are quite familiar, and in many cases have experienced its effects in their own person, and not because it is a good example of the advantage of physiological proving.

Attention has been called to the fact that *dose* is an important element in therapeutics, and especially to the fact that many drugs exert a directly opposite influence in large and small doses. If this is ascertained with reference to any drug, then the therapeutic indications are plain. If we know the action of the large dose, and its influence upon parts and functions, we conclude that the influence of the small dose is directly opposite. Given a disease showing the symptoms of structural and functional drug

disease (large dose), we at once think of small doses of the same drug, because in small doses its influence is opposite.

In other instance the action of the drug is the same in kind, both in small and large dose, and knowing this kind of action, we oppose it to the disease showing opposite symptoms. There are quite a number of such drugs, and some of them are quite valuable remedies, there being no danger of mistakes from dose.

Again, we find drugs producing some peculiar symptoms which do not form a part of, and are not recognized in the ordinary nosological classification of disease—symptoms which may be absent or present in many diseases, and still have no seeming reference to their origin, progress or duration. They are peculiar drug symptoms.

Again, we find that certain drugs will prove curative in disease presenting *peculiar* symptoms, which these drugs will not produce. These symptoms may be absent or present in any disease without seemingly affecting the origin, progress or duration, —indeed, seeming to have no relation to the pathological processes. Here the physiological proving gives no information; our knowledge comes from experimentation in disease, and the direction of experiment is an accidental suggestion.

A few illustrations of these methods of study will prove interesting and profitable. They will be selected from the more common remedies, and so described that the reader may add them to his working materia medica. We will take quinine as the first drug, the physiological effects of which, as has been proven by the experience of many other investigators, is correctly given in the following by Pereira:

"*Excitement of the vascular system,* manifested by increased frequency and fullness of pulse and augmented respiration. Furred tongue and other symptoms of a febrile state are also observed.

"*Disorder of the cerebro-spinal functions,* indicated by headache, giddiness, contracted—in some cases dilated—pupils; disorder of the external senses, agitation; difficulty of performing voluntary acts, somnolency, in some cases delirium, in others stupor.

All fevers, when measured by the thermometer, are periodic; the diurnal variation of temperature in the types called continued ranges from two to four degrees, and the febrile action from quinine poisoning shows every shade from intermittent to continued, and is not usually the typical intermittent.

But the reader will notice that we do not use quinine as a remedy during vascular excitement, except there is a very evident want of a stimulant to the sympathetic and other nerve centers. It is the direct stimulus we want, and it has reference not to the apparent excitement, but to the real depression. The remedy will produce a fever, and it will cure a fever. That it produces a fever shows that its action is directly upon the functions involved in fever; that it cures a fever is because it gives that stimulus necessary to the normal performance of function, and we employ it when such stimulus is necesary.

This property called *antiperiodic* is something we know little about, except so far as we know the facts by experimentation in disease.

Taking ipecacuanha as the second example, we have a very good illustration of the first proposition, that the action of the small is the opposite of the large dose; and knowing the poisonous action we may predicate the curative.

"If the powder or dust of ipecacuanha be applied to the eyes or face, it acts as an irritant, and causes redness and swelling of these parts. Inhaled, it irritates the respiratory passages, and in some cases brings on difficulty of breathing, similar to an attack of spasmodic asthma."

In moderate doses continued for a long time, an irritation of every mucous membrane in the body can be produced by ipecacuanha, in some situations going on to inflammation. In small doses it cures this very condition, and is the remedy for acute inflammation of mucous membrane. Irritation of muscular fiber underlying the mucous membrane is another symptom of its physiological action, and to this also it is a remedy. Not, however, to the irritation of atony, as in the majority of cases of asthma. for here, in place of proving curative, it increases the disease.

Tobacco is another very fair example of this action:—" Its most remarkable effects of languor, feebleness, relaxation of muscles, trembling of the limbs, great anxiety, and tendency to faint. Vision is frequently enfeebled, the ideas confused, the pulse small and weak, the respiration somewhat laborious, the surface cold and clammy, or bathed in a cold sweat." A distressing sensation of sinking at the pit of the stomach is a characteristic symptom.

Given these symptoms as a group, or the most characteristic

of them, and tobacco is a very certain remedy when given in small doses.

Hyoscyamus is another example, though not quite so marked. Faquier says, "Henbane causes headache, giddiness, dimness of sight, dilatation of pupil, a greater or less tendency to sleep, and painful delirium. In some cases these symptoms are followed by thirst, nausea, griping, and either purging or constipation; and in a few instances *febrile heat* and irritation of the skin are induced."

Given a case of *headache,* with giddiness and dimness of sight, and hyoscyamus will prove curative. Given a fever with the same symptoms, and hyoscyamus will prove a valuable remedy.

Taking examples of the second class, those whose action is the same in kind, whether the dose is large or small, we have a large number. We will select those in which the action is not topical, but from the blood.

Jalap is a good example. Its action is that of an excitant to the gastro-intestinal canal in any dose. In large doses it is a painful and drastic purgative; in small doses continued it causes irritation.

Nux vomica is perhaps the best example. In the most minute quantity it is a spinal stimulant, as it is in the largest dose, and the entire range of its use is as a stimulant to the spinal and sympathetic centers. Possibly this assertion may be modified by saying that in small doses the effect is not so much stimulation, as it is the prompting to normal functional activity.

The characteristic symptoms produced in health by nux vomica are of the muscular system, showing its influence on the spinal cord: *"A feeling of weight and weakness in the limbs,* and *increased sensibility to external impressions* (of light, sound, touch, and variation of temperature), with *depression of spirits and anxiety,* are usually the precursory symptoms. The limbs tremble, and a slight sense of rigidity or stiffness is experienced when an attempt is made to put the muscles into action." Then comes the convulsive action of the voluntary muscles, increasing as the remedy is continued.

The symptoms resulting from nux vomica and which, when met with in disease, are cured by it, are italicized.

But in moderate doses, continued for some time, nux vomica is an excellent example of the third action, producing certain peculiar drug symptoms not readily accounted for by the usual

theory of its action. And, which symptoms being found in disease, the drug becomes a remedy.

Thus, if the drug is continued for a length of time, it will in many cases cause an unpleasant colic with pain pointing at the umbilicus; pain in right hypochondria; and in women at the menstrual period a peculiar dysmenorrhea. To these when observed as the result of disease, the nux is curative. It will also give a peculiar sallowness of skin, with relaxation of connective tissue; a large tongue, with yellowish coating; and again, for these in disease, it is a remedy.

If we examine arnica, we find that it "quickens the pulse and respiration, and promotes diaphoresis and diuresis," and shows the properties of a stimulant to the ganglionic nervous system. It is for this purpose we use it in disease, and knowing the action of the drug, we can use it when this stimulant influence is desirable.

"Furthermore, it appears to exert a specific influence over the nervous system, causing headache, giddiness, and disturbed sleep." These are the results of large doses, and due to overstimulation. When we have a headache, giving a peculiar sore and bruised sensation, with disturbed sleep, we have an excellent indication for arnica, and probably the best there is for the internal use of the remedy.

Returning to our first remarks upon the subject, we find that remedies may be classified into: (*a*) Those which remove causes of disease; (*b*) those which restore vital processes.

Taking up the first class, we want to know the influence upon the *life* of those drugs which remove causes of disease.

We say that morbid accumulation in the stomach is a cause of disease, and it may be best to remove this with an emetic —to be determined by the action of the different emetic agents upon the processes of life, especially the effects subsequent to the act of emesis. Compare apomorphine, tartar-emetic, ipecac, lobelia, sanguinaria, apocynum, mustard, common salt and sulphate of zinc as regards the act of emesis and subsequent influence. In a given case of predominant wrong in the stomach by accumulations, we first determine whether this or the drug action will do the greatest wrong to life; and concluding that it is best to effect its removal, we select that remedy which will accomplish the object with the least expenditure of vital power,

leaving the organism in the best condition, or doing anything that needs to be done to restore normal functional activity.

This is an important study, and the method of comparison must lead to a better use of remedies, and, training the mind to accurate thought, it will serve a very important use both in diagnosis and therapeutics.

As we study the gross action of the group emetics, we study the class, cathartics, diaphoretics, diuretics. Here is a series of agents producing alvine dejections, and we wish to determine their use and the individual agent to be employed. We also wish to determine whether the removal of the intestinal accumulations will give sufficient relief to the life to justify the depression which will follow the selected cathartic; that is, will the patient be better with or without the medicine? Then the comparative action of cascara sagrada, podophyllin, magnesia, castor oil, cream of tartar, etc., should be fully considered.

We must get our remedies well in hand, and know them individually. We not only want to know the gross action, but the more delicate shades of action; not only the action in health, but also in the varied changes of disease.

We want to know how a remedy influences: First, as regards the difference in dose—its influence in large, medium, small and minute doses. Second, as to location of action—is it general, localized, definite? Third, as to kind of action—does it increase, diminish or alter? Fourth, is its action physiological—the same in kind and quantity in all cases; or *queer*, depending upon certain symptoms which seem to have little relation to the condition of disease?

If a remedy is not well known, and we wish to give it an investigation, we commence experimentation with it—possibly with a physiological proving, for which a dog is handy, but a man is better. If it is determined to give it to the sick, select a case in which the known action of the drug in small dose is likely to restore some impaired function, or do something that needs be done. The remedy is used singly and the results noted.

Many times the discovery of important therapeutic properties is purely accidental. You prescribe a drug for one thing, and it does something you did not expect. Now you want to be wide awake, not only to know what is done, and what has done it, but the *peculiar* condition of this patient. And so cer-

tainly as you find the same peculiarity in another case, recollect the same remedy.

We prescribe a remedy for some of its usual effects on function, and find to our surprise that the entire disease rapidly fades out before it, and the single agent cures. We ask ourselves at once, what is there peculiar and distinctive in this case? And we carefully scan all the symptoms until we find it. Finding some special symptom, we associate it with the remedy, and when observed in another case we try the remedy again. We read in a journal or text-book a description of some disease, and we see that the writer has had more than ordinary success with a remedy; we want to know what is peculiar in these cases. We examine the text carefully—the writer may mention it incidentally; if so, we associate the peculiarity observed with the curative drug, and test it when we meet similar symptoms.

If every physician could be convinced that it was necessary for him to make a study of the action of remedies in the cure of disease for himself, and not place his entire reliance upon the teaching of the books, practical medicine would advance rapidly. The dependence upon authority dwarfs the mind, obscures the senses, and forms an almost impassable barrier to individual observation.

Every practitioner should devote some of his time to the study of remedies. He may take his materia medica and make a list of the drugs he knows something about, preparatory to a classification. In this classification he may take any statement of the books that his experience has confirmed, but he should not take anything upon the authority alone. Having the group of agents before him, he may classify them himself, and put it in writing, that he may have it before him for revision as his experience grows larger.

His remedies may be first divided into two classes—those which have a general, and those which have a local action. Of course, many remedies will have both a general and local action, but one will be decidedly first and prominent, so that with the majority the classification can be readily made.

It requires thought to make such a classification, and it will cause one to read his books with more care, and recall his experience with remedies more fully, in order to do it satisfac-

torily. It is true that this work requires time, but it gives an education of the mind that could hardly be obtained otherwise.

Having made the foregoing classification, he may say of the action of remedies, both general and local, that they must either increase, diminish or change from the normal standard, and he will then be able to make a second grouping in these classes, and call the drugs excitants, sedatives and alteratives.

As he reads his lists over he is not so certain that the work is well done, and he is likely to say that he will "think about it." That is the very object we have in view, and in "thinking about it" he will learn more about therapeutics than he can possibly learn in any other way.

If now we take our group of general remedies, we find that we can make sub-classes, according to the action of the medicines upon different functions or parts which are general. Thus we have a nervous system which controls the body, divided into brain, spinal cord and sympathetic, and the remedy may expend its principal force upon either the one or the other. We have a blood which is the common source of supply, and the common sewer of the whole body. The remedy may influence the structure of the blood in any of its several parts, or may influence the sewage afloat in it. Then we have the circulation of the blood, and we may have wrongs of this, which are in frequency, impairment, or irregular distribution. We have a lymphatic system common to the entire body, which may be a source of disease. The apparatus for the removal of waste is also to be taken into the estimate, for we have here sources of general disease.

The reader will notice that classification grows more difficult as we progress, and calls for closer study and more thought. But it has this in its favor, that it brings out all we know of medicine, and enables us to classify our own knowledge and that of the books, so as to make them useful.

When we study local remedies we find that they may be classified in a similar manner, some of them readily, others with difficulty. We have remedies that influence the respiratory organs, the digestive apparatus, the urinary apparatus, the excretory apparatus—skin, kidneys, bowels—the brain, etc. We find also that some remedies may be classified as they influence special tissues—mucous membranes, serous membranes, connective tissue,

bones, etc. We find that remedies not only have an elective affinity for parts, but their influence is uniform in health and in similar conditions of disease.

While making these classified lists of remedies it would be well to make one of incompatibles, and carefully study their relations to each other.

Simplicity in prescribing will do much toward avoiding the dangers of incompatibility of medicines. When possible, remedies should be prescribed singly. It is better to prescribe in this way, and when more than one remedy is needed, give the medicines in alternation. When combinations are necessary they should consist of as few agents as possible, and a definite indication for each remedy should always be apparent.

The following rules have proven to be of value as a means of refreshing the memory:

Never use strong mineral acids in combination with other agents, unless you know exactly what reaction will ensue. They decompose salts of the weaker acids and form ethers with alcohol.

Never combine free acids with hydrates or carbonates.

Do not combine two or more soluble salts.

The following more or less insoluble salts are formed whenever the materials of which they are composed are brought together in solutions: The hydrates, carbonates, phosphates, borates, arseniates and tannates of most earthy and heavy metals and alkaloids, and the metallic sulphides; the sulphates of calcium, of lead, and of the subsalts of mercury; the chlorides, iodides, and bromides of bismuth, silver, lead, and sub-salts of mercury; the iodides of quinine, morphine and most alkaloids.

Alkalies precipitate the alkaloids and the soluble non-alkaline metallic salts, and (as also metallic hydrates and carbonates) neutralize free acids.

Silver nitrate, lead acetate, corrosive sublimate and potassium iodide should, in almost all cases, be prescribed alone. The first with creasote forms an explosive compound.

Aconite should never be given in any vehicle except water.

Silver nitrate and lead acetate and subacetate are incompatible with almost every thing, but they may be combined with opium. The subacetate of lead with opium forms an insoluble compound, but the compound is active as a lotion.

Tannic acid and substances containing it are incompatible

with albumin and gelatin. Tannic acid, iodine and the soluble iodides are incompatible with the alkaloids and substances containing them, and with most soluble metallic salts. Vegetable infusions are generally incompatible with metallic salts.

Glucosides should not be prescribed with free acids.

Potassic iodide with potassic chlorate, hydrocyanic acid or potassium cyanide with metallic hydrates, carbonates, subnitrates or subchlorides, or bismuth carbonate or nitrate, or calomel, all form dangerously poisonous compounds.

Explosions result from the combination of powerful oxidizers with readily oxidizable substances, as potassium chlorate or potassium permanganate with tannin, sugar, sulphur, sulphides, vegetable powders, glycerine, alcohol, tinctures or ether. The chlorate of potassium must never be associated with any organic substance; it is decomposed easily by a slight elevation of temperature, giving off its oxygen to the organic matter, which is made up of carbon, hydrogen, oxygen, and sometimes nitrogen, and forms products of oxidation, with a setting free of such an amount of heat that the mixture may be hurled, together with the vessel that contains it, in the face of the person who is so thoughtless or ignorant as to attempt the preparation of so dangerous a combination. Not only does the chlorate of potassium give explosive mixtures with organic substances, but it has the same effect when combined with the hypophosphites of lime, nitrates, and the salts of iron.

Every precaution expressed about the chlorate of potassium is equally applicable to the permanganate of potassium. The association of iodine with a liquid containing large quantities of ammonium will result in the formation of an explosive mixture. Iodine combined with the yellow oxide of mercury and vaseline might serve as an eye salve if the man attempting its preparation was not blown up before completing the labor. Violent explosions have resulted from mixing iodine with essences. Chromic acid is such an energetic oxidizer that it should only be used in crystals or dissolved in water. Bromine should never be combined with either alcohol or oil, and nitric acid should not be prescribed with organic compounds. The facts here given show in a measure the importance of handling the most common drugs with the utmost caution.

The first study of remedies is a study that recalls and fixes

that which we know, and that gathers from books the essential facts or what seems to us essential facts of drug action. It is work, but the physician comes out of it stronger in mind and very much better able to prescribe for disease.

There are some things which can only be learned by experiment, and every one should make some effort in this direction. You have your own bodies, and though you may value them highly, it will do little harm to test some medicines upon your own person. One can also, occasionally, persuade a friend to take a part in testing a remedy. Very certainly, if the physician has occasion to take medicine for any disease, he should carefully note its effects from hour to hour. Let us call this the second method of studying remedies. It is the homeopathic method, though employed to some extent by all classes of physicians. It gives most excellent and reliable results, and we cannot afford to dispense with it.

The third method is by carefully studying the effects of remedies administered for disease. This study can only be made to advantage where notes are kept, when care is used in the diagnosis, and when single remedies, or remedies that act in the same way, are employed. It is true that we can carry something in our memories, and by repeated observations facts will become familiar, but it is not a good plan to trust the memory too far.

There are two things we want to know—the expression of disease, and the action of remedies—and, in so far as we can, we want to associate them together. We may keep a record of cases with but little writing, if we have a plan to commence with. One word will sometimes express the condition of disease; it will rarely require more than a line. We write of one fever; to another we prefix the word intermittent, remittent, continued, typhoid; or it may be variola, rubeola, scarlatina; or catarrh, laryngitis, pneumonitis, enteritis, phrenitis, etc. We have a whole history of the common progress of a disease in a word or two. Now when giving medicines we may note nearly as briefly the reason why we have selected the remedy: Pulse small, frequent—aconite; pulse frequent, sharp—rhus; veins full—podophyllum; tissues full, edematous—apocynum; muscular pain—macrotys; nervous, free from fever—pulsatilla; periodicity—quinine; dull, stupid, sleepy—belladonna; pain of serous mem-

branes—bryonia; dusky coloration of surface of mucous membranes—baptisia; mucous membranes deep red—acids; mucous membranes pale—alkalies.

CHAPTER III.

REMEDIES AND THEIR USES.

Achillea Millefolium—Yarrow.

Yarrow acts directly on the urinary apparatus, and the reproductive organs of the female. It constringes capillaries and relieves irritation. Through this action it overcomes passive hemorrhage. Its action on the urinary organs is marked in kidney, vesical and urethral irritations, such as suppression of urine, strangury and conditions presented in the early stages of some cases of Bright's disease. It is often employed with advantage in atonic amenorrhea, vaginal leucorrhea, diarrhea and dysentery. It is also deemed a remedy of merit in hematuria, hemoptysis, hematemesis, and in passive hemorrhages from the uterus, as well as in some cases of bleeding piles.

Achillea millefolium is alterative, diuretic and astringent.

Indications.—Vesical, renal and urethral irritation; leucorrhea; menorrhagia and atonic amenorrhea; piles with discharge of bloody mucus; suppression of the lochia; hematemesis and hemoptysis.

Dose.—Fluid extract, 5 to 60 drops; oil, 5 to 10 drops; specific medicine, 5 to 60 drops.

Usual dose.—5 to 20 drops.

Acidum Aceticum Dilutum—Dilute Acetic Acid.

When administered before meals, acetic acid checks excessive acid secretions, and when taken in moderation with food it aids digestion by excitation of the salivary secretion and by its solvent action on foods. An excessive use of it impairs digestion and nutrition. Applied with a sponge to the skin it checks excessive sweating and acts as a cutaneous stimulant. It is a good remedy in hemorrhage from the uterus or intestines. For this purpose it should be largely diluted with water and used

as an injection. Vinegar is a good remedy in carbolic acid poisoning. It counteracts both the external and internal action of carbolic acid. Dilute the vinegar and use freely.

Acetic acid in a concentrated form is corrosive and irritant.

Indications.—Excessive acid secretion; excessive sweating; uterine hemorrhage; carbolic acid poisoning.

Dose.—30 to 60 drops.

Usual dose.—10 to 30 drops, largely diluted with water.

Acidum Benzoicum—Benzoic Acid.

A solution which is convenient and medicinally effective may be made by adding two parts of benzoic acid and three parts of the borate of sodium to thirty parts of water.

Benzoic acid is stimulant, expectorant and disinfectant.

Indications.—Excessively alkaline urine, causing frequent urination or nocturnal enuresis; excessive excretion of phosphates; cystitis, when the urine is ammoniacal; irritation of the urethra from excessively alkaline urine.

Dose.—3 to 30 grains.

Usual dose.—3 to 10 grains.

Acidum Boricum—Boracic Acid.

In typhoid fever boracic acid is used internally, either in powder or solution. Adults should be given from ten to fifteen grains three or four times a day. In this condition its use lessens the tympanites, improves the character of the stools, increases the quantity of urine, and causes the tongue and skin to become moist. In the summer diarrhea of children it is also a good remedy. Its freedom from irritating effects makes it a most excellent local antiseptic. It may be used in saturated solution. An alcoholic solution is of value in urticaria and pruritus. A solution of two parts in one hundred parts of water may be injected into the bladder. As an antiseptic surgical dressing it is extensively used. One part of the acid mixed with five parts of lard or vaseline constitutes a good ointment in eczema; and an ointment consisting of one part of boracic acid to four parts paraffin is useful in burns, otorrhea, nasal discharges, wounds and ulcers. This acid is also extensively used for impregnating surgical dressings, English lint being soaked in a boiling solution and then dried.

Boric acid is a non-irritant antiseptic.

Indications.—Internally: Typhoid conditions; summer diarrhea of children. Locally: Suppurating wounds; ulcers; burns and scalds; urticaria; pruritus and eczema.

Dose.—5 to 30 grains.

Usual dose.—5 to 15 grains, three or four times a day.

Acidum Camphoricum—Camphoric Acid.

Camphoric acid has a specific action upon the skin and mucous membranes. It is claimed that the most excessive night sweats of consumptives are controlled by this drug, when twenty grains of it are administered in a capsule one hour before going to bed.

Indications.—Excessive mucous discharges; profuse sweating during recovery from fevers; night sweats of consumptives.

Dose.—1 to 20 grains.

Usual dose.—5 to 10 grains.

Acidum Citricum—Citric Acid.

Citric acid is a true specific for scurvy, and when used freely by persons who are compelled to subsist largely upon salt meat diet it acts as a preventive of scurvy. It has also been employed with good results in some forms of rheumatism. It stimulates the secretions of the mucous and salivary glands, and, largely diluted with water, constitutes a cooling, refreshing and useful drink in fevers.

Indications.—Scurvy and general scorbutic conditions.

Dose.—5 to 30 grains.

Usual dose.—10 to 15 grains.

Acidum Gallicum—Gallic Acid.

Gallic acid is a good remedy in all forms of passive hemorrhage. In menorrhagia, hemoptysis, hematemesis and hematuria it is used successfully. It is also a remedy of value in leucorrhea, catarrh of the bladder, chronic bronchial catarrh, sweating of phthisis, and in profuse expectoration. In albuminuria its administration is promptly followed by a greatly lessened discharge of albumin, and is frequently of great service.

Gallic acid is a powerful astringent.

Indications.—Hemorrhage from mucous surfaces of pul-

monary and urinary tracts; excessive secretion from mucous surfaces.

Dose.—3 to 20 grains.

Usual dose.—3 to 10 grains.

Acidum Hydrochloricum Dilutum—Dilute Muriatic Acid.

This agent is frequently indicated in typhoid fever and in the advanced stages of diseases which have a tendency to develop typhoid conditions. It is also a good remedy when the secretion of gastric juice is scanty, if administered after meals. When given before meals it arrests the secretion of gastric juice. It is, therefore, a useful agent when such secretion is excessive, if given before eating. In wrongs of the stomach which are benefited by muriatic acid there are eructations of greasy, yellow, brown or bitter substances; the breath is hot and pungent; there may be nausea and a tendency to emesis. It is a remedy, therefore, in dyspepsia with these symptoms, and in stomatitis and in pyrosis. In scarlet fever of a severe type, in diphtheria, and especially in its later stages, in syphilis and scrofula, as a stimulant to the digestive organs; in intestinal indigestion, in fermentative diarrhea, in catarrhal states of the stomach in children, in dysentery of a low grade, in erysipelas, pneumonia, and even in rheumatism, where there is a tendency to death of the blood (sepsis), muriatic acid is an excellent remedy.

Hydrochloric acid should always be administered in a liberal quantity of water, and if used in large doses should be taken through a glass tube, to prevent its injuring the teeth.

The concentrated form of hydrochloric acid is a corrosive poison. Diluted hydrochloric acid is a febrifuge and antiseptic.

Indications.—Deep red tongue; tongue coated brown; slick, clean raw-beef tongue; dusky-red mucous membranes; brown sordes on teeth, gums and tongue.

Dose.—5 to 40 drops, well diluted; specific hydrochloric acid, 5 to 40 drops, well diluted with water.

Usual Prescription.—℞ Hydrochloric acid, dilute, gtt. x to xxx; water, ℥ iv. M. Sig. Dose two teaspoonfuls every two hours.

Acidum Nitricum Dilutum—Dilute Nitric Acid.

In broken-down constitutions, with emaciation, and in derangements of the nervous system, nitric acid is frequently indi-

cated. In jaundice and chronic diseases of the liver it is a useful remedy, and in syphilitic poisoning it is used with good results.

Officinal nitric acid may be applied with a glass rod or a pine stick to unhealthy ulcers. A pine stick dipped in the acid and immediately wiped with a cloth, will convey a sufficient quantity of the caustic to the suppurating point. Excessive action of the acid may be prevented by the use of alkaline solutions, or by applying subnitrate of bismuth in powder. A 1 or 2 per cent. solution of the officinal acid frequently applied to syphilitic warts will cause their removal.

"There are certain conditions of disease in which nitric acid is a very valuable remedy, and if it is possible to tell when it is indicated it will prove one of the most valuable of our specifics.

"There is a certain condition of stomach, in which there is irritability with enfeebled function, in which nitric acid is the remedy. And there is a lesion of digestion and blood making other than the derangement of the stomach named, in which nitric acid is a direct remedy. There is also added to this, or separate from it in some cases, an impaired nutrition as well as a slow and imperfect retrograde metamorphosis of tissue and failure of excretion, in which nitric acid will prove a direct remedy.

"Prof. E. Freeman informs me that he has employed it for some time in a class of stubborn cases, presenting some of these features, with most marked success. His cases have embraced those of enfeebled digestion and blood making, and enfeebled and depraved nutrition; taking some cases of scrofula, bad blood, and even phthisis.

"There are four ways of determining the use of these remedies. The first employs them hap-hazard, in groups, singly or combined, simply because they have been used in diseases covered by a name. The second is a better form of empiricism, and employs them one after another, in their supposed order of goodness, until some one hits the case in hand. The third generalizes the symptoms, and determines the quality of the lesion, and for this prescribes with some directness. The fourth tries to determine the principal lesion—basic lesion we have called it—by some positive signs or symptoms, and prescribes for this. Sometimes the prescription is in reality for a pronounced symptom, though if we would inquire far enough we might know there was a constant lesion underlying it.

"In each of these four ways we may prescribe nitric acid; in the last two we may prescribe it in a rational manner.

"I will not undertake to point out the evidences of the pathological lesions, in which nitric acid has been employed with

advantage, as our readers can read this up in our text books; but I will hazard a guess as to the specific indication in certain instances:

"If the tongue, whether pale, rose-red, or deep-red, presents a violet haze, we have an indication for nitric acid. We will notice the same violet haze wherever blood comes to the surface in the capillary circulation. I think we get the most decided results when the mucous membranes are moderately red. Do not mistake the deep, solid purple of the mucous membranes we see sometimes for this violet haze, for here the irritable stomach very frequently presents the red tip and edges of tongue, and sometimes elongated papillæ.

"We do not use it for its acid properties, but probably the benefit is due to the supply of nitrogen in a peculiar form. Of course this is but a supposition.

"I have treated successfully several cases of inveterate chronic ague, of malarial headache, and many other diseases, and of course, in experimenting, have missed it in some cases. I have only the desire here to call attention to the remedy, and have it thoroughly tested, asking that the symptoms be observed, so as to give us definite knowledge of the cases in which it will prove curative." (Scudder.)

Nitric acid is a corrosive poison, and destroys life with the most terrible suffering. Dilute nitric acid is refrigerant, expectorant and anti-syphilitic.

Indications.—Violet color of the tongue; tongue dry and covered with a glazed fibrous coating; diarrhea of children when the discharges are green, curdled and mixed with mucus.

Dose.—20 to 40 drops, well diluted.

Usual Prescription.—℞ Dilute nitric acid, gtt. x to xx; water, ℥ iv., M. Sig. Dose one teaspoonful every hour or two.

Acidum Phosphoricum Dilutum—Dilute Phosphoric Acid.

This acid constitutes a valuable remedial agent in nervous debility arising from overexertion of the mind or from long continued grief. In brain-fag of brain workers its action is decidedly corrective, and in wrongs resulting from sexual excesses, or any nervous strain on the body, it has been used with marked advantage. It is also useful in leucorrhea occurring after too early or too long continued menses, and in watery, painless diarrhea it often constitutes a medicament of curative power. The cases most likely to derive benefit from phosphoric acid are

characterized by indifference, apathy and torpidity of body and mind.

Dilute phosphoric acid is febrifuge, tonic and nervous stimulant.

Indications.—States of depression and indifference; tongue relaxed, sticky and clammy; debility from overexertion of the mind; sexual excess.

Dose.—5 to 60 drops.

Usual Dose.—5 to 20 drops.

Acidum Picricum—Picric Acid.

This agent has been extensively employed as a dressing for superficial burns, and some remarkable results from its use have been reported. In one case a vessel of boiling water had fallen on a man's shoulder and the scalding liquid had flowed across his back and chest to his left hip. When stripped, he looked as though he had on an officer's scarf, there being a dark red mark across his body. He was groaning and seemed to be in great pain. He was put to bed at once and lint soaked in a 3 per cent. solution applied. In a few minutes he declared he felt no pain, and in three days he wanted to leave the hospital.

In another case the writer says: "A man, following the trade of an iron founder, came to me in great pain. Some of the hot fluid iron had splashed in his eye and lodged in the inside of the upper lid from which it was extracted in a solid form by one of his shopmates. His eye was very much inflamed and blood-shot, the eyelid very much swollen. I painted the eye and lid freely with saturated tincture one part, water two parts. He was in much pain when I made the application, but a few minutes after he declared the pain was gone and in a few days he was well. I gave him a weaker solution to apply himself and with it he cured several burns among his shopmates; also on one occasion, one of his children had her hand scalded and another was burned across the palm of the hand. One application in each case took the pain away and in a few days cured."

Picric acid is not a suitable agent in the treatment of extensive and deep burns, as in such cases there is danger of poisoning. It controls pain and promotes healing. In superficial burns sterilized gauze is soaked in a saturated solution of the acid and laid over the burned surface, a light dressing placed

over this and the whole retained by a light bandage. At the end of three days the dressing should be wet with the acid solution and gently removed. A second dressing may then be applied in the same way as at first. When pus no longer forms this dressing may be replaced by a simpler one. In some cases the acid solution is simply brushed over the burned surface, and a light dressing placed over it for a few days.

Alcohol or a solution of boric acid will aid much in removing the stains from picric acid.

Indications.—Superficial burns.

Acidum Salicylicum—Salicylic Acid.

This agent prevents decomposition and fermentations of all kinds. It may be used internally in all conditions showing indications of the presence of some poisonous substance in a state of decomposition. Erysipelas, surgical fever, pyemia, scarlet fever, acute rheumatism, intermittent fever and pneumonia are among the diseases likely to present indications for this acid. As an application, injection or wash it may well be combined with borax—one part of each to one hundred parts of water. This solution constitutes a clean and cheap antiseptic, well adapted to the treatment of abscesses and suppurating wounds. It is also of value in inflammatory conditions of the eye and its surroundings.

"I believe that salicylic acid from wintergreen is decidedly preferable to that from carbolic acid as an antirheumatic, and remedy for neuralgia, or an antipyretic. One thing is certain: it is less irritant to the stomach. There are cases in which the salicylic acid is best given in pills—two grains at a dose—when it is used as an acid. This gave the marked cures of the first years of its use. Then it acted best as a salicylate of sodium, or potassium, in solution. I prefer the salicylate of potassium, and make the dose contain about two grains of the acid. I have two rules that guide me in prescribing it. If the breath is markedly fetid, give salicylic acid or a salicylate. If the tongue is purplish in color, large, and coated in the center, give salicylate of potassium." (Scudder.)

Salicylic acid is a deodorizer and an antiseptic. It should be used with caution. Very large doses have induced acute delirium and rapid collapse and even death.

Indications.—Acute and subacute rheumatism, with high tem-

perature, bluish moist tongue and soft skin; foul and offensive breath in ulceration of the stomach and of the lungs. Locally: tonsillitis, fetid catarrh, indolent ulcers, pruritus, chilblains, and in all septic conditions.

Dose.—1 to 15 grains.

Usual Dose.—1 to 10 grains every one to three hours, in pill or tablet form.

Acidum Sulphuricum Dilutum—Dilute Sulphuric Acid.

This acid is used with much advantage in diarrhea, especially when accompanied by great prostration. In inflammatory conditions, especially in inflammation of the vital organs, it is of great value, and in erysipelas it is used with satisfactory results.

In passive hemorrhage, where there is feebleness of mucous membranes, with inactive capillary circulation, it constitutes an excellent remedy, and in colliquative night sweats it exercises an influence which is decidedly corrective.

Dilute sulphuric acid is antiseptic, astringent and tonic.

Indications.—Tongue having a brown coating which is nearly black in the center, with dark mucous membranes; dry tongue, with red tip and edges; diarrhea with extreme prostration; passive hemorrhage, with feebleness of mucous membranes and sluggish capillary circulation; excessive mucous discharges.

Dose.—2 to 10 drops in water.

Usual Dose.—3 to 5 drops, well diluted with water.

Acidum Sulphuricum Aromaticum—Aromatic Sulphuric Acid. Acidum Sulphurosum—Sulphurous Acid.

This agent possesses properties similar to those of dilute sulphuric acid. It should be administered by means of a glass tube, so as to protect the teeth from the action of the acid.

Aromatic sulphuric acid is tonic, stimulant and astringent.

Indications.—Dark red or brown tongue and mucous membranes; sordes on the teeth, with impaired condition of the blood; ulcerative stomatitis; diarrhea with extreme prostration; passive hemorrhages; feebleness of the mucous membranes with sluggish capillary circulation; colliquative night sweats; nervous prostration.

Dose.—5 to 30 drops, largely diluted with water.

Usual Dose.—5 to 10 drops in four ounces of sweetened water three times a day.

Acidum Sulphurosum—Sulphurous Acid.

This well known remedy is employed with excellent results in typhoid fever, and in pneumonia when there is a typhoid condition it exerts an influence which is unmistakably curative. It is also a most efficient remedial agent in many cases of scarlet fever, and in dysentery it is often used with great advantage.

"We employ it as an antizymotic, and a parasiticide, and not for the common purposes of an acid, though here, as in the cases of the alkaline sulphites, there must be the general indications for an acid, as there was with them for an alkali.

"The sulphurous acid, like the alkaline sulphites, specifically antagonizes zymotic causes of disease. It is well to keep in mind the fact that this is something more than simply arresting or modifying the septic process, for the zymotic influence frequently destroys the life of the fluids and solids without producing putrescency.

"We prescribe sulphurous acid as an antizymotic in those cases which present reddened mucous membranes, with brownish coatings of tongue and sordes. Given the indications for the use of an antizymotic, with the indications for the use of an acid, we select the sulphurous acid.

"Sulphurous acid may be employed in yeasty vomiting, in aphthous mouth and throat, or wherever the presence of microscopic fungi is suspected, with the same certainty as the sulphite of sodium. We also use it in porrigo, trichosis of scalp, pityriasis versicolor, with excellent results. As a local application it should be diluted with from two to six parts of water.

"I wish to call especial attention to its use in some diseases of the throat, by the spray or atomizing apparatus. In diphtheria, with dark redness of mucous membranes, and fullness with relaxation, there is no local remedy equal to sulphurous acid spray. It is equally beneficial in those cases of cynanche maligna, with dark redness of mucous membranes. Whilst in ordinary sore throat from cold, with dusky discoloration, it offers one of the best local applications in the materia medica." (Scudder.)

"This is the acid that forms in combination with other elements the *ite* salts—like the sulphite, hyposulphite and bisulphite of soda and the sulphites of potash and magnesia. These salts are closely relative in their action to sulphurous acid; and we wonder if their medicinal action is not due in whole or in part to the sulphur element. They are given in closely allied conditions in which there is *pallor* of the mucous membranes. The

acid is given when there is *redness,* although sulphurous acid is not used for the general purposes of an acid. In this direction its action is feeble. Sulphurous acid is generally made by deoxidizing sulphuric acid by means of charcoal and passing the fumes into water. Of this sulphurous acid gas 9.2 is absorbed by the water. This gaseous element soon escapes, and the drug is worthless. Instead of sulphurous acid there remains a dilute sulphuric acid, which is altogether different in its action. Therefore, only the *fresh, chemically pure* article should be used. It has a not unpleasant, sour, sulphuric taste, and internally it may be given in fluid drachm doses of a dilution of one part of the acid to nine parts of water. For local use it should be diluted in the proportion of one to twenty or more.

"Sulphurous acid is variously classified as a remedy. It has a place among the disinfectants, the deodorizers, the antizymotics, the antiseptics, etc. Eclectically it is specifically indicated in any disease in which there is a below-par state, with redness of the mucous membranes; the tongue is slick, glutinous—raw beef; later it may be brown, with a *dirty* colored coating—sordes; there is a mawkish, disagreeable odor to the excretions and to the breath; the tissues are full, feeble and relaxed. Its local use is demanded when the same conditions prevail generally or locally—as in wounds; there is fullness, feebleness, relaxation and a tendency to slough—the wound is dirty and sticky, unhealthy. *Dirty* is an excellent word to use in this description. When sulphurous acid is *the* remedy there is a dirty, *red,* muddy color of the mucous membranes; when it is a sulphite of soda there is the same *dirty* appearance, but we have *pallor* of the tissues and a white coating upon the tongue, which in later stages becomes brown. Yeasty vomiting, which is frequently seen in many of these depressed conditions, is an indication for sulphurous acid.

"With these indications always vividly before us, there is no trouble in prescribing sulphurous acid in zymotic diseases like typhoid fever, etc. No other remedy will act so promptly. In scarlet fever and in diphtheria, with deep redness, full and relaxed tissues, and evidences of a death of the blood, sulphurous acid locally with a spray, and internally, is the proper remedy. It is both an antiseptic and a parasiticide—a germicide. The same may be said of it in cynanche maligna, aphthous ulcerations, and even in the sore throats due to cold."

Sulphurous acid is antiseptic and disinfectant. In a concentrated form it is highly destructive to life.

Indications.—Tongue of natural color, but full and dirty; tongue coated with a nasty substance, yellowish-brown in color; tissues of the throat full and lifeless in appearance; skin having

a lifeless and rusty appearance. Locally: Enfeebled and sloughy mucous membrane.

Dose.—15 to 60 drops, well diluted; specific sulphurous acid, 5 to 90 drops, well diluted.

Usual Prescription.—℞ Sulphurous acid, ʒii, water, ℥ iv. M. Sig. Dose one teaspoonful every hour or two.

Acidum Tannicum—Tannin.

Tannic acid with many physicians is a favorite remedy in diarrhea, on account of the smallness of the dose in which it may be efficiently used, and from the fact that it seldom irritates the stomach and bowels. Used as a snuff, in bleeding from the nose, it will relieve many severe cases. As a gargle in elongated uvula, it promptly contracts the tissues involved. In local hemorrhages tannin dissolved in glycerine affords a most convenient and powerful astringent application. Pure glycerine will dissolve nearly its own weight of tannin, and, as the solution will readily mix with water, an application of almost any strength can be quickly prepared. The solution should be of recent preparation and kept in a dark place, as it decomposes.

Tannin is a powerful astringent.

Indications.—Exhaustive discharges; hemorrhage from the nasal cavities; elongated uvula.

Dose.—1 to 10 grains; glyceritum, 10 to 40 drops.

Usual Dose.—2 to 5 grains.

Acidum Tartaricum—Tartaric Acid.

Tartaric acid stimulates the mucous and salivary secretions, and is often used for this purpose in fevers. It has also been employed as an application to the throat in diphtheria, the effect being to convert the membrane into a gelatinous mass, which is more easily expelled.

Tartaric acid is sedative, antiseptic and refrigerant. In large doses it is an irritant poison, and has caused death. Its antidotes are magnesia and carbonate or bicarbonate of soda.

Indications.—Deep redness of mucous membranes, with dryness of mouth; all fevers when an acid drink is indicated.

Dose.—5 to 30 grains.

Usual Dose.—5 to 10 grains, largely diluted with water.

Aconitum Napellus—Aconite.

Aconite is one of the most useful remedies in our materia medica. The drug has been so long and so extensively employed that the physicians are numerous who believe that they know all there is to know about its curative action; but aconite is a remedy possessing great and varied possibilities—much greater than any one man can readily ascertain.

In all forms of disease, when the pulse is small and frequent, aconite lessens vascular excitement and the rapidity of the circulation, promotes secretion from the skin, and reduces the temperature. It moderates the force and frequency of the heart's action—increasing the power of the heart and the tone of the blood vessels. It also has a decided action on the excretory organs, and its control over the excessive action of the skin, bowels and kidneys makes it a remedy of great value in the summer complaints of children. Aconite is, without doubt, our most frequently indicated remedy. Cholera infantum, diarrhea, dysentery, tonsillitis, croup, simple and continued fevers, scarlet fever, diphtheria, measles, parotitis and rheumatism are among the most common diseases likely to call for aconite as a part of the treatment.

In tonsillitis aconite is a very useful internal medicament, and much good may also be derived from its local influence. This influence may be conveniently secured in the following manner: Add two drachms of the specific medicine to two ounces of vinegar and two quarts of water. Then have the patient inhale the steam produced by placing one or two hot stones in the vessel containing the combination. This steaming process should be continued about five minutes, and repeated every two or three hours.

Aconite constitutes an essential part of a valuable liniment which is made as follows:

Specific aconite ..... ℥ iv.
Chloroform ..... ℥ i.
Soap liniment, q. s. ad ..... ℥ iv.
M. Sig. Apply with the hand two or three times a day.

This liniment constitutes a most efficient application in all forms of rheumatism and in neuralgia, and its use in strains and sprains will yield equally good results.

"Aconite is a stimulant to the sympathetic system of nerves, and increases the power of the heart to move the blood, at the same time that it places the blood-vessels in better condition for its passage. It will be recollected that the same system of nerves governs the movements of the heart and of the entire system of blood-vessels. What influences one will, therefore, influence the other in the same manner.

"But aconite is said to be a sedative; and by a sedative we are to understand a remedy that diminishes the frequency of the pulse. How can aconite, therefore, be a stimulant and a sedative?

"There is no doubt but that aconite is one of the most certain remedies we have to reduce the frequency of the pulse in certain conditions of disease. And the condition is that in which there is a want of power on the part of the heart, and a like want of innervation to the capillary system of blood-vessels. Aconite in small doses lessens the frequency of the pulse, because it removes obstruction to the flow of blood in the vessels, and gives greater cardiac power.

"We employ it in all forms of fever, to control the circulation and diminish the temperature. Used in the doses herein named, it gives greater freedom to the circulation, at the same time that it diminishes the frequency of the pulse. It seems to remove obstruction to the free circulation of the blood, at the same time that it removes irritation of the cardiac nerves, and gives increased power to the heart.

"Its action in inflammation is as pronounced as in fever. It directly antagonizes inflammatory action, and in the early stage will arrest it speedily—if this is the sedative indicated.

"There are some diseases of an inflammatory character to which aconite is *specific,* that deserve mention. The first of these is tonsillitis, in which we employ it by internal administration, or better by the use of the steam atomizing apparatus. In some forms of mucous croup, with enfeebled circulation, in muco-enteritis, and in simple colitis or dysentery from cold, I never think of making any other prescription.

"As the notice of the action of aconite in croup may not impress the reader sufficiently, I desire to say that I regard it as the most certain internal remedy in all forms of this disease, and if one cannot find a specific indication for another remedy, let him give this. I prefer gtt. ij to water ℥ iv, a teaspoonful every fifteen to thirty minutes. Stillingia liniment is the external application.

"To determine which of a class of remedies is applicable in a given case, is the most difficult task of the physician, and any information in this respect is of much value. I doubt whether any one using aconite and veratrum would be willing to risk giving this estimate. Many may have an empirical intuition in regard to it, but most could venture nothing but a guess.

"Veratrum is the remedy where there is a frequent but free circulation. It is also the remedy where there is an active capillary circulation, both in fever and inflammation. A full and bounding pulse, a full and hard pulse, and a corded or wiry pulse, if associated with inflammation of serous tissues, call for this remedy.

"Aconite is the remedy when there is difficulty in the capillary circulation, a dilatation and want of tonicity of these vessels, both in fever and inflammation.

"In general terms, veratrum is the remedy in sthenia, aconite in asthenia; but there are too many exceptions to this to make it a safe rule for our guidance.

"Aconite is a remedy for the frequent small pulse, the hard and wiry pulse (except in the cases above named), the frequent, open and easily compressed pulse, the rebounding pulse, the irregular pulse, and, indeed, wherever there is the evidence of marked enfeeblement of the circulation.

"It is the sedative I associate with belladonna in congestion, especially of the nerve centers, and to relieve coma. Whilst I would use veratrum with gelsemium in determination of blood to the brain, and in active delirium.

"Veratrum acts more efficiently upon the excretory organs; indeed I believe it to be one of the most certain remedies we have to increase excretion. Hence it is employed with great advantage for those purposes usually called alterative.

"Aconite controls excessive activity of the excretory organs, whether of the bowels, kidneys, or skin. Thus it is our most certain remedy in the summer complaint of children, associated with belladonna in diabetes insipidus, with the bitter tonics and strychnia in phosphaturia and oxaluria, and with the mineral acids in night sweats." (Scudder.)

"Aconite increases the power of the heart to move the blood; at the same time it places the blood-vessels in a better condition for its passage, and yet we place this remedy among special sedatives. Will it sedate? Give this remedy where you have a rapid, small pulse and see how soon it will bring down the number of pulse beats, and at the same time increase the strength of the individual beat.

"Aconite is the remedy for *asthenia*. The pulse is small, frequent, often easily compressed; there is difficulty in the capillary circulation; there is lack of tonicity in both heart and blood-vessels; there is increased temperature, and in the early stages there is coldness and chilliness. In acute cases this chilliness alone is indication sufficient for the use of the aconite.

"We can trace the action of aconite when we give it, not mechanically, but intelligently. Give it for relief of acute chills and coldness in the early stages of disease. The arterioles under

the influence of the vascular nerves have contracted, cutting off peripheral blood supply. Hence the coldness. Aconite acting through the sympathetic nerves flushes these cutaneous arterioles, the patient becomes warm, the chills are gone, perspiration becomes free.

"It is doubtless a fact that giving the single remedy we can get a better knowledge of the individual characteristic action of the remedy. On the other hand, with our present limited knowledge of many remedies, we can at times certainly make useful combinations. For instance, in pneumonia, according to indications, aconite may be combined with ipecac, bryonia or lobelia; in rheumatism with rhus, bryonia or macrotys, or, when there is much pain and not sufficient bowel action, with colchicum.

"In cardiac trouble, where there is not only the characteristic weakness, but irritation shown by the varying and uncertain pulse, aconite can be combined with cactus." (Fearn.)

"This drug has a special or specific action upon the inflammatory disturbances of mucous and serous membranes. It has no superior in the early stages of diseases of the throat and larynx. This is especially true in affections of childhood. In tonsillitis or quinsy, in croup (with phytolacca), in pharyngitis, as well as in the early stages of bronchitis and pneumonia, aconite is an excellent remedy. It is also a very efficient remedy in diarrhea, dysentery, and in cholera infantum, as well as in pericarditis, pleurisy, peritonitis, meningitis, phrenitis, and in congestion of the brain.

"In the early stages of paralysis, when there is still an active hyperemia, aconite is frequently efficient. In the simple ephemeral fevers of childhood, and also in the various eruptive fevers, no remedy excels aconite in certainty. Perhaps belladonna is more often *the* remedy in scarlet fever, while aconite is the measles remedy. They can be well given together or in alternation, as any other remedy indicated, like rhus and gelsemium, can be used at the same time. Aconite is many times the best remedy in erysipelas, and in the nervous states that cause 'a rush of blood to the head.'

"When given in overdoses, aconite is a deadly poison, and there is no known antidote to its action. The symptoms produced by too large a dose are, heat in the stomach, frequent respiration, tingling of the lips and tongue, constriction or paralysis, stiffness of the fauces, cold hands, dizziness, perverted sight, slow pulse; finally speechlessness, deafness, convulsions, death. The first thing to be done in a case of aconite poisoning is to empty the stomach *at once*, before too much of the drug is absorbed. This may be done with the stomach-pump or a speedy emetic, like sulphate of zinc; or better, a hypodermic injection of apomorphine. After thorough emesis has occurred, charcoal

may be given. Sulphate of atropine, or specific belladonna, or digitalis, should be given in large doses. Stimulants, like whisky, brandy and ammonia, should be pushed to the utmost. Coffee is an excellent remedy in aconite poisoning, and it is nearly always close at hand. A battery can also be used for its stimulating effect. As we have said above, there is no known antidote to an overdose of aconite, but these remedies, intelligently and perseveringly applied, will do much to overcome its untoward action, and perhaps, to a sufficient degree, to save the life of some person who has not taken enough of the drug to kill instantly." (Bloyer.)

Aconite is sedative, diaphoretic, diuretic, antispasmodic and narcotic. In large doses it is a very dangerous drug.

Indications.—Small and frequent pulse with increased temperature; hard, dry, painful cough; expectoration streaked with blood.

Doses.—Fluid extract of the root, 1-20 to ½ drop; specific medicine, 1-20 to ½ drop. Large doses (½ drop) of specific aconite will produce, in some persons, toxic symptoms.

Usual Prescription.—℞ Aconite, gtt. iii to x; water, ℥ iv. M. Sig. Dose one teaspoonful every hour.

Actæa Alba—White Cohosh.

White cohosh exercises a beneficial influence on the functions of waste and nutrition. It also exerts a special action on the female reproductive organs, and is, therefore, of frequent usefulness in the treatment of some of the wrongs peculiar to women. As a remedy for after-pains it has but few equals, and in congestion of the uterus it is employed with marked success.

"White cohosh is very closely allied, as a remedy, to both the black and the blue cohosh; but for some reason it has never gained the popularity of these remedies, and especially of the first. We confess that our little experience with actæa, gained from the use of the infusion, was quite satisfactory; but why we did not use it more extensively we cannot say, unless because of our familiarity with so great a number of remedies of like action.

"It is certainly an active agent. Large and frequent doses of white cohosh will produce emesis and violent purgative effects. Even grave gastro-intestinal disorders of the nature of an irritation or inflammation, have been produced by overdoses.

"The properties ascribed to white cohosh as a remedy are alterative, narcotic, parturient, emmenagogue, and a nervous

stimulant. It is said to have a special or specific action upon waste and nutrition, and upon the reproductive organs of the female.

"Through its decisive action on the female reproductive organs, it becomes an excellent remedy in ovarian troubles with unpleasant sensations and extreme sensibility to the sense of touch over this region. In uterine congestion and neuralgia of the below-par variety, actæa is a remedy the equal of macrotys or caulophyllum, and the superior of pulsatilla. In menstrual wrongs and irregularities, like amenorrhea, dysmenorrhea, and menorrhagia, it is a reliable remedy. In chorea, hysteria, in epilepsy, and in convulsions of catamenial origin, white cohosh is of great benefit. The same is true of it in debilitating leucorrheal discharges, and in prolapse of the uterus. It has been specially and highly recommended as a remedy for troublous after-pains, and as a partus preparator."

Actæa alba is emmenagogue, alterative, nerve stimulant, emetic and purgative.

Indications.—Atonic conditions of the gastro-intestinal tract; chorea, hysteria, epilepsy and other convulsive conditions when connected with an abnormal state of the female organs of reproduction; uterine diseases characterized by atony.

Dose.—Fluid extract, 1 to 20 drops; specific medicine, 1 to 20 drops.

Usual Prescription.—℞ Actæa alba, gtt. x to xx, water, ℥ iv. M. Sig. Dose one teaspoonful every two or three hours.

Adonis Vernalis—Spring Adonis.

This agent constitutes a valuable medicament in wrongs of the heart, both functional and organic. Under its influence the heart's action becomes slower, more regular and more forcible. It also greatly increases the urinary secretion.

"Its influence is somewhat like digitalis, but lacks the unpleasant features of that remedy. Its tonic influence upon the heart is most marked. In one case the heart-beat ranged from 50 to 60 beats per minute, when it should have been 70 to 90; very feeble and frequently irregular; at times dizziness, partial loss of consciousness, and twice within a week syncope. A single day's use showed marked improvement, and within a week the pulse had come up to 70 per minute, and regular. In this case the trouble was evidently due to over-exertion—heart-strain. I have only used the remedy in a few cases, but I have used it singly, and have watched its action carefully. From

what I have seen I have hopes that it will surpass digitalis as a cardiac tonic. I use it in small doses. Ten drops of the tincture are added to four ounces of water, and a teaspoonful is given every three or four hours." (Scudder.)

Adonis vernalis is tonic, cardiac stimulant and diuretic. In very large doses it is an irritant, and has caused paralysis of the nervous apparatus of the heart. It should be used with caution.

Indications.—Palpitation of the heart; mitral insufficiency; dropsy resulting from inefficient action of kidneys; irregular action of the heart; difficult breathing caused by feebleness of the heart.

Dose.—Fluid extract, 1 to 2 drops; specific medicine, 1-10 of a drop to 2 drops.

Usual Prescription.—℞ Adonis, gtt. x to xx, water ℥ iv. M. Sig. Dose one teaspoonful every two hours.

Ægle Marmelos—Bael Fruit.

This agent promptly relieves diarrhea without causing constipation. The ripe fruit has an agreeable taste, and is sometimes used to overcome constipation. A tincture of the root, bark and leaves has been employed with good success in hypochondria, palpitation of the heart and asthma.

Ægle marmelos is a mild astringent.

Indications.—Diarrhea and dysentery.

Dose.—Fluid extract, 30 drops to 2 drachms.

Usual Dose.—30 to 60 drops.

Æsculus Glabra—Buckeye.

In that form of asthma which is not markedly paroxysmal æsculus is prompt in exerting a controlling influence over the difficult breathing. It is also beneficial in the difficult breathing of consumptives. As a stimulant to the nervous system in paralysis, and as a remedy in mental depression, æsculus is used with success. In hemorrhoids it is also a medicine of curative power.

"The buckeye has been used in the treatment of hemorrhoids with much success, and I am satisfied that in some forms of the disease it is the most certain remedy we possess. I have also given it in a few cases of diseased uterus with good results—cases in which the entire organ was enlarged, the cervix tumid, with too frequent recurrence of the menstrual flow.

"The marked influence of the æsculus on the nervous system would suggest a line of experiment likely to lead to the development of valuable properties. It has already been employed as a stimulant to the nervous system in some cases of paralysis.

"We may reason in this way: A remedy that cures hemorrhoids must exert a powerful influence upon the circulation; whilst its poisonous action, often witnessed—vertigo, diminished sight, wry neck, fixed eyes, paralysis, convulsions, etc.—show its influence upon the nervous system." (Scudder.)

Æsculus glabra is tonic, stimulant, astringent, febrifuge and antiseptic. In very large doses it is narcotic.

Indications.—Sensation of constriction in the chest; sensation of tightness in the region of the heart; difficult breathing of asthma; feeling of constriction about the rectum.

Dose.—Fluid extract, 1 to 5 drops; specific medicine, 1-5 to 5 drops.

Usual Prescription.—℞ Æsculus glabra, gtt. x to ℥ ii, water, ℥ iv. M. Sig. Dose one teaspoonful every hour or two.

Æsculus Hippocastanum—Horse Chestnut.

Horse chestnut exerts a direct influence upon the pelvic contents, and is an efficient remedy in congestion of these organs, as well as in all reflex symptoms due to such affections.

"The influence upon the nervous system is similar in kind to the buckeye, though not so active. This will probably be its best field of action, standing midway between belladonna on the one hand and nux vomica on the other.

"It exerts the same influence upon the circulation as the æsculus glabra, and has been successfully employed in the treatment of hemorrhoids. It will doubtless be found to improve the circulation generally, and may be employed whenever there is want of power in the heart, capillary stasis, or tendency to congestion." (Scudder.)

"Æsculus hippo. has been variously classified. It is described as a tonic, an astringent, a febrifuge, a narcotic, an antispasmodic, etc. Eclectically, or specifically, if you prefer the term, it may be said to be a remedy in any disease in which general malaise, soreness, and fullness of the blood-vessels are the prominent symptoms—symptoms due to capillary stasis or congestion. All agree that it acts specifically upon the portal circulation, and relieves to a certainty conditions depending upon hepatic engorgement. It is a remedy for uneasiness or fullness

and aching in the region of the liver, and especially so if there be a throbbing sensation.

"Æsculus hippo. is unanimously a remedy for hemorrhoids and rectal irritation of a congestive type. There is a sense of uneasiness, more or less aching or burning pain; of heat, itching, constriction, as if a foreign body were present. The hemorrhoids, in an æsculus case, are usually large and purple; they rarely bleed; there may be present a diarrhea, with frequent and free evacuations; or with the sense of fullness there may be dryness, or even a spasmodic stricture of the rectum, causing a veritable proctitis, or a rectal neuralgia. The reflex disturbances due to these rectal troubles, such as headache, backache, dyspepsia of various sorts, and peculiar asthmatic disturbances, are all overcome by the persistent use of æsculus hippocastanum.

"Æsculus hippo. is also an efficient remedy in many of the neuralgias of the internal viscera, and in many of the disturbances of the nervous system. This is especially so when the condition of plethora and fullness referred to above is present. It is a remedy (and is said to have a specific action upon the uterine cervix, as well as upon the liver and rectum) in cervicitis and endocervicitis." (Bloyer.)

Æsculus hippocastanum is tonic, astringent, febrifuge, narcotic and antiseptic.

Indications.—Congestion of the colon, rectum and the entire pelvic viscera; large and purple hemorrhoids which seldom bleed; neuralgias of internal viscera; uneasiness and fullness, with aching in the region of the liver.

Dose.—Fluid extract, 5 to 15 drops; specific medicine, 1 to 15 drops.

Usual Prescription.—℞ Æsculus hippocastanum, gtt. x to xxx, water, ℥iv. M. Sig. Dose one teaspoonful every two to three hours.

Ætheris—Ether.

In syncope ether is a valuable diffusive stimulant. It is also a good remedy in gastralgia. In surgical operations it is used by inhalation as an anesthetic, and as a spray to produce local anesthesia. As an enema it is employed in asphyxia and colic. By dropping or spray it is useful to relieve the pain of articular rheumatism and headache, and also as an aid in the reduction of incarcerated hernia. By spray against the part it produces local anesthesia. Subcutaneously it is of value in sudden collapse from any cause.

Hoffman's anodyne is a mixture of strong ether, alcohol and ethereal oil. The dose of this mixture is from 10 to 30 drops.

Ether is narcotic, stimulant, antispasmodic, refrigerant, carminative and anesthetic. It is highly inflammable, and its vapor forms an explosive mixture with air. Its vapor is heavier than air. Therefore, in using ether at night the light should be kept above the patient. Ether should always be used with great caution It has frequently caused death.

Indications.— Syncope; hysterical paroxysms; gastralgia; cases requiring an anesthetic.

Dose.—5 to 40 drops.

Usual Dose.—5 to 20 drops.

Agaricus Albus—Boletus.

In the night sweats of consumptives agaricus is a superior remedy. It is also of value in periodic fevers, especially when the chills are brief and the fever almost continuous, and followed by little or no sweating. It also hastens the drying up of milk in weaning.

"The tincture of boletus exerts a marked influence upon the spinal and sympathetic nervous systems in certain cases of disease. It has been successfully employed in the treatment of epilepsy and chorea, and to check the rapid pulse with hectic fever and night sweats in phthisis. It has also been recommended in insanity where there is a feeble cerebral circulation and imperfect nutrition; and also in neuralgia with similar symptoms." (Scudder.)

Agaricus albus is anidrotic, antiperiodic, stimulant to the nervous system, and, in large doses, cathartic and emetic.

Indications.—Night sweats of consumptives; diarrhea of consumptives; profuse secretion; yellowness of the skin; aching of the back and joints; chills alternated with flashes of heat; chills confined to the back.

Dose.—Fluid extract, 1 to 20 drops; specific boletus, ¼ to 2 drops.

Usual Prescription.— ℞ Boletus, gtt. x to xx; water, ℥ iv. M. Sig. Dose teaspoonful every two hours.

Agnus Castus—Chaste Tree.

In impotency and other abnormal conditions of the sexual

system this remedy has been employed with the most satisfactory results.

Agnus castus is tonic and restorative.

Indications.—Deficient secretion of milk; excessive sexual desire; atonic condition of the reproductive organs of both male and female; loss of sexual power and coldness of genital organs.

Dose.—Tincture, 2 to 10 drops.

Usual Prescription.—℞ Agnus castus, gtt. x to xx; water, ℥ iv. M. Sig. Dose, one teaspoonful every two to three hours.

Agrimonia Eupatoria—Agrimony.

Agrimonia is a remedy of great usefulness in all atonic conditions of the urinary apparatus. In chronic catarrhal diseases of the kidneys and bladder it has been extensively employed, and often with markedly curative results. It gives tone and strength to these organs, and may well replace many of the more prominent diuretics in many cases.

Agrimonia exerts a specific influence upon mucous membranes, checking profuse secretion and favoring normal activity. This action has suggested its usefulness in chronic bronchitis and in phthisis. Its stimulant influence upon all the vegetative processes causes an improvement in the appetite, and favors digestion and nutrition.

"Given a pain in the region of the kidneys, and I always think of agrimonia as the remedy. In my practice I have seen wonderful results from it, in cases of months' and years' duration, and when everything had failed. I have found other uses for it, but this has been so prominent that I always associate the medicine and the position of the pain.

"Among neuralgias, nephralgia is one of the severest. It is a torture that might be borne for an hour or a day; but continued night and day for a fortnight or a month, the sufferer may well pray for relief or death. It varies in cause, in some a well-defined lithemia, in others there is absolutely nothing to be determined wrong with the urine. I have seen cases where the urinary deposit felt like pounded glass; cases with muco-pus in large amount; cases where the triple phosphate would make the lower third of the urine turbid as if with albumin; cases where not more than an ounce or two of turbid, dark-colored urine would be passed in the day; and still cases where the normal amount of clear urine of specific gravity 1020 would be passed.

"What wrong of the renal nerves takes place to produce this

pain I have never been able to determine. Enough to know that in agrimonia I had a remedy. It allayed irritation of the stomach, stopped nausea and vomiting, started secretion from the liver, and did all that seemed to be necessary. I have said to myself, if it has such a favorable action on the stomach, it should be one of our best stomachics and tonics—but I have not found it so in other cases. Having such a kindly and certain action upon the liver, it should take the place of chionanthus, leptandra or podophyllum, but it does not.

"It is one of those singular remedies that follow the specific indications sharply; and the indication is, pain in the region of the kidneys, especially of the right side. In this it is like collinsonia, or like colocynth. It does not make so much difference as to the size of the dose as one might suppose, as I have had the same effect from gtt. x to water ℥ iv. as I have had from ʒ ij to water ℥ iv, a teaspoonful every one, two or three hours." (Scudder.)

Agrimonia eupatoria is alterative, tonic, stimulant and astringent.

Indications.—Deep-seated pain in region of the kidneys; colicky pain pointing in the lumbar region; pain extending from kidneys down ureters; catarrhal conditions of the bladder; uterine pain, with uneasiness in the lumbar region, and muddy, foul-smelling urine.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Dose.—5 to 10 drops.

Ailanthus Glandulosa—Chinese Sumach.

This agent is employed with advantage in dysentery and leucorrhea. It is also deemed a remedy of merit in atonic conditions of the nervous system.

"As a remedy ailanthus is, to a great degree at least, similar to our well-known rhus toxicodendron. Specific indications calling for ailanthus are either an atonic condition of the nerves, or of the mucous membranes of the body, or great general weakness and prostration. Because of its special tonic effect on mucous membranes, it is an excellent remedy in some cases of leucorrhea, etc. For the same reason it has been highly praised as a remedy in many dyspeptic troubles. It has been highly commended as a remedy in malignant scarlet fever—in cases in which all evidences of sepsis are quite pronounced or prominent, such as dusky eruption, dirty, dry, cracked tongue, malignant sore throat and tonsils, with sordes on the teeth, and excoriating

discharges from the nose and mouth, bad respiration, an adynamic persistence of disagreeable symptoms telling of blood poison. It should be classed in this instance as an antiseptic, and in the same class with baptisia, echinacea, etc.

"With special reference to the action of ailanthus as a tonic to the nervous system, it is efficient as a remedy in some cases of asthma, as well as in epilepsy and in many cases of epileptiform contraction of the muscles, etc. Frequently ailanthus will relieve nervous palpitations and severe cases of singultus, that have withstood for a long time all other remedies.

"In overdoses ailanthus causes vertigo, severe headache, pains in the back and limbs, together with great prostration, tingling and numbness; it reduces the pulse-beat and the respiration, and if it be given too frequently or in too large doses it causes death by paralyzing the respiratory center. It is said that both quassia and gentian intensify its action, and that it should not be administered with either iron or lead preparations." (Bloyer.)

Ailanthus glandulosa is nerve tonic, antispasmodic, astringent, anthelmintic and purgative. In very large doses its action is much like that of tobacco on persons not accustomed to its use.

Indications.—Atonic conditions of mucous membranes; epileptiform contraction of muscles; palpitation; atonic condition of the nervous system; great general prostration.

Dose.—Fluid extract, 1 to 15 drops; specific medicine, 1 to 15 drops.

Usual Prescription.—℞ Ailanthus, gtt. x to xxx; water, ℥ iv. M. Sig. Dose one teaspoonful every hour or two.

Aletris Farinosia—Unicorn Root.

This agent was deemed an important constituent of many of the compounds employed by the early Eclectics. In many instances, however, in using what they supposed to be aletris they were in reality employing helonias. Probably the use of the common names *stargrass* and *unicorn root* was largely at fault for this state of affairs. Finally it was pointed out by Prof. Lloyd, the author of the pharmacological part of the supplement to the American Dispensatory, that the drug that had for years furnished the medicine aletris was in reality helonias. That the given uses of the two preparations, sold respectively under the name of aletris and helonias, were usually the same, or nearly the same, is well known to practitioners, and thus the two drugs have gone hand in hand as medicines of special value

in uterine disorders. Consequently, when preparations of true aletris were employed for such purposes and no results were obtained from them, they were called uncertain remedies, and the reason is apparent. The gynecological uses of both drugs have been established from helonias and not aletris. Therefore, it turns out that after all these years aletris must be re-studied, and this will furnish a good opportunity for the young physician to make a differential study of the two drugs, and determine the indications for aletris.

"Nowadays the specific medicine is in common use, and may be given in doses as large as one fluid drachm. It is not a very active remedy, though the effect produced varies with the size of the dose given. Small doses are tonic, increase the appetite, loosen the bowels, and promote the secretion of urine.

"It is a remedy in those digestive or dyspeptic troubles which are attended by anemia. Prof. Goss says it is a remedy for 'gastric depravity.' Thus it becomes a remedy in worn-out women, chlorotic girls and nutritionless men. As a remedy in many cases of flatulency, of colic, of chronic constipation, etc., it should not be overlooked. It can be used alone, or in alternation or in combination with other stomach remedies.

"In nearly all of the writings within our reach, great stress is put upon aletris as a remedy having a specific action upon the reproductive organs of the female. It is said to be indicated by too frequent menstruation, with labor-like pains, and general pelvic weight, debility and discomfort. It has a special action upon the womb, increasing its strength and function. It is therefore a remedy for sterility due to inactivity of the uterus. It is also a remedy for that 'tired feeling' in the anemic woman who has leucorrhea, is constipated, or has constipation with pain in the rectum. Its tonic action relieves, if it does not wholly overcome, morning sickness of pregnancy; hurries on tardy menstruation, and increases the flow when it is scant. In fact, it is a 'uterine regulator.' It is *the* remedy for the woman who aborts frequently, or in whom there is a disposition to abort because of her low vitality. It is a remedy in this respect, a companion to, or very much like, mitchella repens and viburnum prunifolium. It is a remedy for some cases of hysteria, for a prolapsed anemic uterus, for pelvic discomfort from any cause when coupled with anemia. It is the congener of pulsatilla, macrotys, caulophyllum, etc.

"Aletris, taken as a whole, is an *active* remedy, and richly deserves much greater attention than it receives from the physician of to-day."

Aletris farinosia is gastric stimulant, diuretic, expectorant

and uterine tonic. Large doses act as an emeto-cathartic, and produce nausea, vomiting, dizziness and purging.

Indications.—Flatulency; colicky pains; atonic conditions of the digestive organs; too frequent menstruation, with labor-like pain and sense of debility in the pelvis.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 60 drops.

Usual Prescription.—℞ Aletris, gtt. x to xx; water, ℥ iv. M. Sig. Dose one teaspoonful every three hours.

Alnus Rubra—Tag Elder.

This agent was a favorite remedy with the early Eclectics, and was employed by them with great advantage in the treatment of many chronic diseases. It improves nutrition and increases waste. It also stimulates and increases the secretion of gastric juice, and in this way becomes an efficient remedy in indigestion due to debility of the stomach. In the treatment of skin diseases, either of the eczematous or pustular variety, it has been employed with excellent results, and in glandular enlargements its action has proved corrective. The action of alnus upon the mucous membranes makes it an excellent remedy in nursing sore mouth, and in some cases of passive hemorrhage it has been employed with much benefit. Alnus is slow in its action, and should, therefore, be continued for a considerable length of time.

"Its special use seems to be in those cases in which there is superficial disease of the skin or mucous membranes, taking the form of eczema or pustular eruption. In these cases I have employed it as a general remedy and as a local application with the best results. It does not seem to make much difference whether it is a phlyctenular conjunctivitis, an ulcerated sore mouth or throat, chronic eczema or secondary syphilis presenting these characteristics, it is equally beneficial." (Scudder.)

Alnus rubra is alterative, resolvent, tonic and astringent. In large doses it is emetic.

Indications.—Suppuration of the lymphatic glands; chronic skin diseases; conditions causing boils; breaking down of surfaces, resulting in ulcerations of the skin, mouth and throat; eczematous conditions.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 60 drops.

Usual Dose.—5 to 10 drops every two to four hours.

Aloe—Aloes.

Aloe is much used as a cathartic, but many better remedies can be employed.

"It is not as a cathartic that I would recommend aloes, but for a use that may seem very singular. In small doses it exerts a direct influence upon the waste and nutrition of the nervous system. In cases of feeble innervation, especially in persons of gross habit, it will be one of our best agents. I have usually prescribed it with tincture of nux vomica or with tincture of belladonna, the dose of a strong tincture being from two to ten drops.

"In some cases it will prove serviceable when associated with the bitter tonics, as in this: ℞ Extract of nux vomica, grs. vi.; aloes, grs. xv; hydrastine, ʒ ss. Make thirty pills. One may be given three or four times a day." (Scudder.)

Aloe is cathartic, emmenagogue, anthelmintic and stomachic.

Indications.—Hemorrhoids from partial congestion; profuse menstruation in females of relaxed fiber; watery diarrhea from weakness. To meet these indications the remedy must be used in the small doses named in the "Usual Prescription."

Dose.—Fluid extract, 10 to 30 drops; powdered extract, 1 to 5 grains.

Usual dose.— 1 to 2 grains.

Usual Prescription.—℞ Aloe socotrina, gtt. v to x; water, ℥ iv. M. Sig. One teaspoonful every hour or two.

ALOIN.—This is the purgative principle of aloe vulgaris.

Dose.—¼ of a grain to 5 grains.

Indications.—Constipation caused by atonic conditions of the large intestine.

A pill composed of one-fifth of a grain of aloin and one-sixtieth of a grain of strychnine constitutes a combination which will cure many cases of constipation. One of these pills should be given from one to three times a day, as the case may require.

Alpinia Officinarum—Galangol—Colic Root.

This is an excellent remedy in forms of dyspepsia which are characterized by nausea and vomiting. It aids in the digestive process, preventing fermentation and promoting the removal of flatus.

Alpinia officinarum is a stimulating aromatic.

Indications.—Indigestion when there is fermentation and flatus; all cases in which an aromatic stimulant is needed; dyspepsia when there is vomiting or sickness at the stomach.

Dose.—Fluid extract, 5 to 20 drops.

Usual dose.—5 to 10 drops.

Alstonia Constricta—Australian Fever Tree.

This agent possesses tonic and antiperiodic properties similar to those of quinine, and is sometimes employed as a substitute for the latter drug. It has been employed in prostrating diarrhea with marked advantage, and in dysentery it has many times served a useful purpose. Its antiseptic properties have often been found useful in the diarrhea of typhoid fever, and also in the diarrhea of consumption. It is soothing to the irritated bowel and possesses a tonic astringency. Alstonia constricta assists in the convalescence of low fevers, as well as in the convalescence of any acute disease, overcoming the debility of diphtheria, scarlatina, and that following parturition and lactation.

Alstonia constricta is tonic, antiseptic, astringent, febrifuge and antiperiodic.

Indications.—All diseases in which periodicity is a prominent symptom, such as intermittent and remittent fevers; diarrhea of typhoid fever; debility following acute diseases; irritation of the intestinal tract; debility dependent on lack of digestive power.

Dose.—Tincture, 10 to 60 drops; powdered bark, 2 to 8 grains.

Usual Dose.—Tincture, 10 to 20 drops every hour or two, the first dose to be given several hours before expected chill.

Alstonia Scholaris—Dita Bark.

Dita bark possesses a considerable antiperiodic power, and has been successfully employed in chronic intermittent fever. The unpleasant taste which it leaves in the mouth makes it somewhat unpopular with many patients.

Alstonia scholaris is antiperiodic, febrifuge and tonic.

Indications.—All diseases in which periodicity is a marked symptom, such as malarial fevers, etc.

Dose.—Tincture, 20 to 60 drops; powdered bark, 2 to 10 grains.

Althæa Officinalis—Marshmallow.

Althæa has been employed with advantage in many affections of the kidneys and bladder. It increases the secretion of urine and exerts a demulcent influence upon all parts of the urinary mucous membrane. In acute cystitis its influence is relieving in character, and in strangury it has often proved useful. In gastritis, enteritis and bronchitis it is deemed a remedy of merit. It is also of value in inflammation of the fauces and tonsils, and in coughs and hoarseness its soothing influence has been found useful.

"Marshmallow is an excellent remedy in diseases attended with pain, especially of the urinary organs. It relaxes the passages in nephritic complaints, in which cases a decoction is the best preparation." (Beach.)

Althæa officinalis is diuretic and demulcent.

Indications.—Renal irritation; acute dysentery and diarrhea; strangury; inflammation or irritation of the bladder; retention of urine; hematuria; gastro-intestinal irritation or inflammation.

Dose.—Fluid extract, 30 drops to 2 drachms; infusion, 1 to 2 ounces.

Alumen—Alum.

Alum, in powder or solution, may be used whenever a mild and unirritating astringent is indicated. A solution of equal parts of alum and borax makes a curative injection in vaginal leucorrhea. A powder composed of two parts of alum and one part of orris root constitutes an efficient treatment in excessive sweating of the feet. A little of this powder dusted into the stockings daily will soon remove all offensive odor, and greatly lessen the perspiration.

Alum is a hemostatic astringent.

Indications.—Locally: Catarrhal conditions, especially when there is great relaxation of mucous membranes, with thin and watery discharges; passive hemorrhage; vaginal leucorrhea; excessive perspiration of the feet.

Ambrosia Artemislæfolia—Rag Weed.

Ambrosia has been used with advantage in fevers in which there was a tendency to putrescency, and in diarrhea and dysen-

tery with this characteristic its employment has been followed with good results. It is also useful in hemorrhages which are not extensive.

Rag weed is not very frequently employed by modern physicians, but the early Eclectics often obtained good results from its exhibition.

Ambrosia artemislæfolia is stimulant, astringent and antiseptic.

Indications.—Fevers characterized by a disposition to putrescency; hemorrhoids; mucous fluxes; passive hemorrhages.

Dose.—Specific medicine, 1 to 20 drops.

Usual Dose.—5 to 10 drops every two or three hours.

Ammonii Acetatis, Liquor—Spiritus Mindereri—Solution of Acetate of Ammonium.

This solution is often employed in low forms of disease in place of alcoholic stimulants, as it acts well without causing cerebral disturbances. It is also used as a means of sobering intoxicated persons, one drachm being administered every fifteen minutes, after vomiting has taken place. It aids the eruptive process in measles and at the same time strengthens the patient. In the typhoid conditions which often appear in pneumonia it will assist in the process of expectoration, and do much toward carrying the patient above the stage of dangerous collapse.

"Liquor ammonii acetatis or solution of ammonium acetate, has long been a popular remedy, being most generally known as spirit of mindererus. When indicated it is a very valuable remedy, but to be of any value whatever, it must be properly prepared. The point we wish particularly to emphasize in speaking of this preparation, is that it should *never* occupy a place on the medicine shelf, but should only be prepared when needed for immediate use.

"This preparation may be easily prepared by the doctor. In fact, he should, if possible, do this himself. Several precautions are necessary to be observed in producing this medicine. If your ammonium carbonate is of poor quality, your spirit of mindererus will be equally valueless. Proceed as follows: Select a good piece of ammonium carbonate about the size of a walnut. Having poured into a suitable vessel any desired quantity of dilute acetic acid, drop the lump of carbonate of ammonium into it and let it remain in it until effervescence has ceased. Do not be deceived as to when effervescence ceases, for bubbles will continue to arise through the liquid for some time after the proper point

has been reached. By watching the operation it will be observed that there comes a time when the active bubbling or foaming *suddenly ceases,* though a few gaseous bubbles still continue to rise. At this juncture remove the lump of ammonium salt and the solution will be found to be pleasantly acid and agreeable. If the lump be allowed to remain longer than above indicated, the liquid will assume a disagreeably acrid taste, and you will have defeated your purpose so far as producing a good medicine is concerned.

"Spirit of mindererus is one of the two chief sobering remedies—the other being potassium bromide. In the Eastern States the latter is the favorite 'drunk mixture,' being used in the form of the elixir of bromide of potassium. Western physicians seem to have favored solution of ammonium acetate. It is not the remedy for confirmed cases and those commonly affected with delirium tremens, but is adapted to those individuals who have taken a little too much liquid refreshment to retain their sobriety. In these cases it is a very active sobering remedy for drunkenness. This solution is likewise very valuable in low forms of capillary bronchitis in children, and is peculiarly efficient in producing an eruption in the exanthemata, whether tardy or due to retrocession, and especially when associated with imperfect circulation. It should not be given in high inflammatory or febrile conditions. It may be employed in the low stage of typhoid fever, where alcoholics are not well borne. A good way to exhibit the remedy is in combination with simple syrup, directing the preparation to be kept upon ice, in cold water, or at least in a cold situation, until used up. It is a very efficient remedy for some forms of sick headache."

Ammonium acetate is diaphoretic, diuretic and stimulant.

Indications.—Eruptive diseases when the eruption is slow in making its appearance; lack of cutaneous secretion in non-inflammatory conditions; depressed nervous system when the skin is dry and the kidneys inactive; sick headache; painful menstruation and uterine colic; chronic rheumatism and gout.

Dose.—1 to 2 drachms.

Usual Dose.—1 drachm in one or two ounces of water.

Ammonii Benzoas—Benzoate of Ammonium.

The benzoate of ammonium renders the urine acid, arrests fermentation, and promotes the solution of renal and cystic deposits.

Indications.—Ammoniacal urine, which causes cystitis, incontinence of urine, or urine loaded with phosphates.

Dose.—5 to 30 grains.
Usual Dose.—5 to 20 grains.

Ammonii Bromidum—Bromide of Ammonium.

The bromide of ammonium is a remedy of great value in the treatment of epilepsy. It has been used for many years in the treatment of this terrible condition, and with it many cases have been cured. It will not cure persons who have been afflicted with this disease for a long time, but it will cure a very large per cent. of the cases occurring in children. The dose given in the "Usual Prescription" is usually sufficient in the treatment of children from two to five years of age, but in some cases a much larger dose is required. In all cases the medicine should be continued for at least one year from the date of the last convulsion. The bromide of ammonium is also frequently indicated in cerebro-spinal meningitis, whooping-cough and severe occipital headaches.

The bromide of ammonium is tonic, sedative, or antispasmodic, according to the quantity used. In very large doses it produces poisonous effects, and in some cases mental derangements.

Indications.—Convulsions of children; involuntary movements of muscles, and a tendency to loss of consciousness.

Dose.—2 to 20 grains.

Usual Prescription.—℞ Bromide of ammonium, ℥ iss; water, ℥ iv. M. Sig. Dose one teaspoonful four times a day.

Ammonii Carbonas—Carbonate of Ammonium.

The carbonate of ammonium is used in fainting, chloroform narcosis, after hemorrhages, and whenever a stimulant is needed in depressed action of the heart. It is also employed to counteract the depressing influence of anesthetics. In hysteria, with acidity, abdominal distension and eructations of gas, this agent is very useful.

The carbonate of ammonium in small doses is a diffusible stimulant and antispasmodic. In very large doses it is a powerful narcotic and irritant poison.

Indications.—Hysteria; nervous debility; flatulent colic; chloroform narcosis.

Dose.—2 to 10 grains.

Usual Dose.—This drug is best administered in the form of aromatic spirits of ammonia, using from 10 to 60 drops in water. This preparation consists of a solution of the carbonate of ammonium and ammonia water in alcohol and water, with aromatic essential oils.

Ammonii Chloridum—Chloride of Ammonium.

The chloride of ammonium—also known as the muriate of ammonia—is a stimulant to the capillary circulation. It is used with good success in non-febrile catarrhs, with tenacious expectoration. In chronic bronchitis it affords relief, and in chronic dysentery it is a remedy of merit. Nervous headache comes within its curative range, and in neuralgia it is a favorite remedy. Chronic rheumatism and rheumatic faceache are also benefited by its use. An aqueous solution of this salt constitutes a very efficient application in rhus poisoning, chilblains and indolent tumors. The solution may vary from the strength of five grains to an ounce of water to a saturated solution.

"The best indication for it is a dusky flush of the skin, the redness effaced by pressure returning slowly. A dusky redness of mucous membranes, not indicative of blood poisoning, will sometimes call for this remedy. It is also a good remedy when there is oppressed respiration, with bronchial sounds on auscultation, neither dry nor moist.

"We also employ a bath of muriate of ammonia as a stimulant to the skin, especially in the eruptive fevers when the eruption is tardy in appearing. In some cases it is used with an inunction, being rubbed up with lard." (Scudder.)

Chloride of ammonium is diaphoretic, diuretic, laxative, or refrigerant, according to the amount used. In very large doses it is a narcotic irritant.

Indications.—Tenacious expectorations; inflammatory effusions; tuberculous diseases; chronic pulmonary affections; nervous headaches; amenorrhea, resulting from deficient uterine action; neuralgic affections; hoarseness.

Dose.—5 to 30 grains.

Usual Dose.—½ grain to 10 grains.

Ammonii Iodidum—Iodide of Ammonium.

The iodide of ammonium is used in asthenic chronic diseases, and for this purpose it is a useful remedy. In chronic head-

aches, when the circulation is feeble, and the patient has a stupid, heavy look, it is a remedy of value. It is also successfully used in chronic enlargements of the liver and spleen resulting from malarial influences. It is used locally as an application to boils, buboes and abscesses.

"Iodide of ammonium increases retrograde metamorphosis at the same time that it exerts a stimulant influence upon the nervous system, especially the sympathetic system. Thus it can be employed with less risk than iodide of potassium, when the nutritive powers are feeble, as is the case occasionally in secondary syphilis.

It has been employed in certain cases of persistent headache with excellent results. They are those in which the eye is dull, the face expressionless, the circulation feeble, the patient being of a full habit." (Scudder.)

The iodide of ammonium in small doses is alterative, diuretic and antisyphilitic.

Indications.—Headache, with dizziness; unsteadiness of walk; feeble circulation; enlargement of liver and spleen, of malarial origin.

Dose.—1 to 3 grains.

Usual Dose.—½ of a grain to 2 grains.

Ampelopsis Quinquefolia—American Ivy.

This agent has been employed in chronic diseases of the respiratory organs, such as chronic bronchitis and chronic laryngitis, with results which would seem to suggest further study. In chronic cutaneous affections it has also displayed important curative properties.

Ampelopsis quinquefolia is a stimulant to the mucous membranes and skin, alterative, diuretic, astringent, tonic and antisyphilitic.

Indications.—Incipient phthisis; scrofula; chronic bronchitis; chronic laryngitis; chronic cutaneous affections; dropsy.

Dose.—Fluid extract, 30 to 60 drops.

Usual Dose.—Fluid extract, 10 drops in water every two or three hours.

Amygdalus Persica—Peach.

In acute gastritis this agent has been employed with gratifying results, and in cholera infantum it has many times acted

curatively after failure to secure any beneficial action from other approved remedies. In one case reported the writer says that his little patient would almost immediately vomit up everything he gave it, and he had used every remedy usually employed in such cases, when amygdalus was suggested by counsel. It was administered, and promptly cured the patient. Amygdalus also exerts a corrective influence in vomiting of pregnancy, and in hemorrhage from the bladder it is deemed a remedy of usefulness.

"The infusion or tincture has a direct influence in quieting irritation of the stomach and upper intestinal canal. It is also a mild tonic, improving the functions of digestion. For these purposes it is one of the most valuable articles in the materia medica.

"It also exerts an influence upon the circulation and upon the nervous system which deserves investigation." (Scudder.)

"Of all remedies in the materia medica, there are few, if any, so valuable in the treatment of irritation of the stomach and its complications as this one. Its effect is both sedative and tonic to this organ, according to the dose given and the frequency of its repetition. When there is great irritation of the stomach, shown by an elongated, pointed tongue, with reddened tip and edges, and the patient is nervous, restless, and inclined to vomit even from a teaspoonful of water, or the smell or sight of anything to eat, with acute tenderness over the stomach, peach tree will act as a sedative, and should be given in frequently repeated doses. The intervals between doses may vary from ten to thirty minutes, while the case is extreme; when it becomes better the intervals can be lengthened. This method of administering the remedy is applicable to acute cases especially. When the same symptoms are present, but in a less marked degree, and in cases of long standing, its *tonic* effect may be had from the usual dose given at intervals of three or four hours. It lessens irritation of the pneumogastric nerve, and will thus lessen fever.

"Peach tree is *the* remedy for *vomiting* when due to irritation, and the above symptoms present; for vomiting of nervous origin; and many times it is an excellent medicament in the vomiting of pregnancy, and will relieve when everything else fails.

"In gastritis, either acute or chronic, with other indicated remedies, amygdalus is *always* the treatment. With the symptoms here enumerated pronounced, it is the remedy never to be overlooked or forgotten in cholera infantum, in cholera morbus, and in the debilitating diarrheas and dysenteries so common in children in the summer months.

"It has been highly extolled for certain kinds of cough due to an irritable condition of the throat and bronchial tubes; and

in some cases of respiratory troubles of a like nature; also in some cases of irritable bladder, where there is extreme tenderness over this viscus.

"It is probable that the activity of the remedy is due more or less to the prussic acid contained in the preparations of the drug. It therefore can be given in overdoses, and ill effects may follow. Care should be exercised in giving it to debilitated and exhausted children. As much as twenty drops of the specific medicine may be added to four ounces of water, and of this a teaspoonful may be given at intervals of from ten minutes to four hours, as the exigencies of the case may demand.

"Perhaps the best preparation of the drug is the *cold* infusion. The small twigs and bark of the minute limbs are placed in cold water. In a few hours the virtues have been imparted to the fluid, and this may be given in half or full teaspoon doses. Hot water destroys the value of the infusion. An alcoholic preparation excels the infusion prepared with heat."

Amygdalus persica is tonic to the nervous and circulatory systems, sedative and antispasmodic. In large doses it is laxative.

Indications.—Tenderness in the epigastrium; irritability of the stomach; pointed and elongated tongue, with reddened tip and edges.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, ½ to 10 drops.

Usual Prescription.—℞ Amygdalus, gtt. xx; water, ℥iv. M. Sig. Dose one teaspoonful. In irritation of the stomach the dose should be repeated every fifteen minutes. When used to meet other indications the dose should be repeated every two or three hours.

Amyl Nitris—Nitrite of Amyl.

This agent is employed in various forms of disease of the nervous system, but if it is continued too long the pulse becomes very quick, small and thready, respiration very rapid, and the skin bluish in color. As soon as the patient becomes flushed, the pulse increased in frequency and the respiration more rapid, the inhalation should be discontinued, as the symptoms continue to increase for some time after the withdrawal of the remedy.

Nitrite of amyl is antispasmodic and anesthetic.

Indications.—Syncope and chloroform poisoning; epilepsy when the approaching attack is first felt; sea-sickness; nervous

headache; toothache; earache; angina pectoris; dysmenorrhea; neuralgia.

Dose.—1 to 5 drops by inhalation from a handkerchief, until the pulse becomes more frequent. If necessary, the dose may be repeated as soon as the effects of the former dose pass off.

Anacyclus Pyrethrum—Spanish Chamomile.

Spanish chamomile is said to be a prompt and efficient remedy for toothache, and in relaxation of the uvula to exercise a corrective influence. It has also been highly recommended in palsy of the tongue and throat.

Anacyclus pyrethrum is a powerful local irritant and stimulant.

Indications.—Rheumatism and neuralgic affections of the face, palsy of the tongue and throat; relaxation of the uvula; toothache.

Dose.—Fluid extract (to be held in the mouth but *not* to be swallowed), 30 to 60 drops.

Anemopsis Californica—Yerba Mansa.

This agent has been somewhat extensively employed in the western and southwestern sections of the United States, and by many physicians it is deemed an efficient drug. It is certainly worthy of further study, and the indications which follows will suggest the lines along which such study is most likely to prove profitable.

One or two drachms of the tincture of this plant to four ounces of water makes a good nasal spray. A teaspoonful of the same mixture may be given internally every three or four hours. A strong infusion of the plant constitutes an efficacious application to saddle and collar galls on horses.

Anemopsis Californica is tonic, stimulant, astringent, carminative and antiemetic.

Indications.—Bronchial cough; colds, catarrh and sore throats; bronchial and pulmonary diseases; diarrhea and dysentery; gonorrhea, with profuse discharge; malarial fever; syphilis. Locally: syphilitic sores; catarrh, sore throats and colds.

Dose.—Fluid extract, 5 to 60 drops.

Usual Dose.—10 drops in syrup every three or four hours.

Anhalonium Lewinii—Muscale Buttons.

This agent is a superior cardiac tonic, but great caution must be exercised in its employment. Its long continued use, or its use in large doses, must be avoided. In highly wrought nervous individuals it has caused seminal emissions without erection.

Anhalonium lewinii is tonic, cardiac stimulant and sedative.

Indications.—Angina pectoris; asthmatic dyspnea; oppression in the region of the precordia.

Dose.—Fluid extract, ¼ to 1 drop. In severe cases 2 to 3 drops may be administered as a dose occasionally.

Anthemis Nobilis—English Chamomile. Matricaria Chamomilla—German Chamomile.

The therapeutic action of these important plants being similar it may be well to embody them both in one article.

In the treatment of children indications for chamomile are frequently seen. In the colicky condition which frequently afflicts infants during the first few days of their existence, ten drops of this remedy added to five teaspoonfuls of warm sweetened water constitutes an efficient prescription, and the medicine, if given freely, soon removes the little one's sufferings.

"Under all circumstances chamomile is said to be tonic, due to the bitterness; antispasmodic and stimulant, owing to a volatile oil; diaphoretic, emmenagogue, and emetic. We look upon the remedy as having a specific action upon the nervous system and upon the mucous membrane. The second named may depend upon the first. We are positive, however, that it is an excellent remedy in both the child and the adult, in troubles of an emotional nature, as well as in many diseases of a catarrhal nature, due to affected membranes.

"The child that should get chamomilla (or matricaria, as the specific medicine is called) is extremely restless and irritable; nothing satisfies it; it wants to be petted and carried, and cries when its wants, which are legion, are not satisfied. The nervous adults that should have matricaria are peevish, 'touchy,' extremely impatient, and sensitive to pain. They are hyper-esthetic; they are on the borderland of hysteria or hypochondria.

"Matricaria is an indicated remedy in many cases of incipient inflammation of the mucous membranes of the body. There are cough and evidences of cold, perhaps alternate flushing and pallor: shivering, with internal heat or fever, coryza, eyes hot

and swollen; the stomach and bowels are disturbed; there may be pain, colicky diarrhea, or sour vomiting, etc.

"In our daily use of matricaria, more from habit than anything else, we prescribe it more frequently in diseases of children than in diseases of adults. We believe it to be, however, as fully effective in one as in the other, when the indications for its administration are present. In debility of the digestive tract of children, and in many of the digestive wrongs incident to dentition, matricaria is a most valuable remedy. The child is nervous, fretful, more or less hot, dissatisfied; it is restless, it twitches, and turns, and cries; there may be griping, colicky pains due to flatus; diarrhea is frequently present, and the stools are green and watery, or green and white, and slimy, often green and white and yellow mixed; the odor is usually foul, and there is frequently excoriation about the anus from the acidity of the discharge. There may be much or little fever, with or without a tendency to spasm. Any other indicated remedy may be given with or in alternation with matricaria.

"With these symptoms as a guide, we may prescribe matricaria with certainty and satisfaction in any of the nervous diseases of children; in dentition, in flatulent colic, and other digestive wrongs. It is a remedy for either constipation or diarrhea. It is a safe and efficient remedy frequently for the many rashes and eruptions incident to babyhood. It is just as efficient for 'liver-grown' babies—those in which the liver is full, congested and tender. It is an excellent remedy for some urinary disturbances in children, as when there is an involuntary enuresis due to irritability of the bladder from cold, etc., or when there is difficulty and pain in voiding the urine. Matricaria has been highly recommended for the swollen breasts frequently seen in babies. We doubt whether it is as efficient as phytolacca in this disturbance.

"In adults matricaria will prove as efficient in the same class of diseases, with the same symptoms prevailing. It is especially recommended for amenorrhea from cold, and for dysmenorrhea, for neuralgia and for headache, and for false pains of pregnant women, as well as for many other nervous manifestations in these same patients. It is highly praised for its effects in certain cases of rheumatism, recent in nature, as well as for pains and vague manifestations of a hysterical nature or origin. The cold infusion has been praised for its effects upon malarial trouble.

"Matricaria has had its praises sung for its efficiency as a remedy when used both internally and locally in ill conditioned ulcers, and in chronic skin troubles generally, when there is a tendency to ulceration; also in syphilitic ulcers, buboes, etc. It has had no little praise, and is frequently used by the Germans as a home remedy, both internally and locally in conjunctivitis and in inflammatory conditions elsewhere in which a poultice or

wet compress can be used. The infusion, hot or cold, is a common, and we believe, beneficial remedy, when used locally, in some cases of chronic vaginitis and leucorrhea of a subacute character. It lessens both the pain and the discharge." (Bloyer.)

"Matricaria is usually listed as having properties similar to anthemis, but of less activity. It has, however, come to be preferred over the latter by Eclectic practitioners, and is now an important remedy with us, particularly in affections of young children. It has two particular specific fields of action—one upon the nervous system, subduing nervous irritability, and the other upon the gastro-intestinal tract, relieving irritation. Upon the nervous system its action is most pronounced, affecting both the sensory and motor nerves. It is peculiarly adapted to the nervous manifestations of dentition, and other affections where there seems to be a morbid susceptibility to pain. Earache, rheumatic and neuralgic pains, abdominal neuroses, etc., are relieved by it when the nervous apprehension is all out of proportion to the amount of pain experienced. A matricaria patient is restless, irritable, discontented, and impatient, and if a child, is only appeased when continually carried. In pregnancy it relieves nervous twitching, cough, false pains, etc., accompanied by great unrest. It should be borne in mind, however, that it is not the gross dose of matricaria that will overcome these morbid nervous phenomena, but the small, or almost minute dose. It is one of those agents, and we have many, that exert their peculiar effects only in small doses, yet can be used without harm in large doses, but without the peculiar benefit derived from the smaller amounts. It relieves the erythism producing hysteria—a little slowly, perhaps, but its effects are lasting—and for the conditions that threaten infantile convulsions during dentition, it is one of the most certain of drugs. After the spasms have supervened, it is not equal to gelsemium or lobelia.

"While it has been said that it has two specific fields of action —upon the mental and nervous, and upon the digestive tract—it must be remembered that the nervous manifestations calling for matricaria are nearly always present in the disorders of the latter, while on the other hand, the nervous phenomena may occur without any disturbance of the latter. Hence the reference to the nervous symptoms of stomach and bowel disorders, given as specifically calling for the drug. In summer diarrhea of irritation (not of atony) it becomes an important remedy. The condition will probably not be without call for other specifics, but the indications for matricaria will be distinct. There is marked irritability, the child is peevish and fretful, the stools extremely fetid, and may excoriate around the anus more or less. In appearance they vary—may be watery and green, or slimy, per-

haps in yellow or white lumps, or it may be of undigested curds of milk, imbedded in a green mucus.

"In subacute inflammation and in congestion of the liver, small doses of matricaria are very efficient when the bowels are costive, the urine voided with difficulty, the child fretful and peevish, and the right hypocondrium tender. If fever is present, aconite may be associated with it. It corrects the skin eruptions and rashes due to these disorders. Alone, or associated with phytolacca, it relieves soreness and swellings of the breasts in infants, and is useful in suppression of the lacteal secretion. It is a remedy for flatulent colic with distension.

"Either small or large doses of matricaria (specific or infusion) are of value in amenorrhea, with sense of weight and heaviness in the womb, and bloating of the abdomen, accompanied with sudden nervous explosions of irascibility. The infusion, given to the extent of producing free diaphoresis, relieves dysmenorrhea with labor-like pains, and tends to prevent the formation of clots. Various painful conditions, due to contracting colds, are relieved by matricaria infusion associated with aconite. Among these may be mentioned earache, rheumatism, catarrhal affections of the bowels, ears, nose, and eyes. Locally, it has been used as a wash for leucorrhea, mammary abscess, ulcerating bubo, and catarrhal conjunctivitis." (Felter.)

Chamomile is antispasmodic, tonic, stimulant, diaphoretic, emmenagogue and carminative. In very large doses it causes vomiting.

Indications.—Diarrhea of children when the discharges are slimy or green; abdominal pains and colic in children; irritability and nervousness of children caused by teething; nervous state causing children to cry and start in sleep.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 60 drops.

Usual Prescription.—℞ Anthemis, gtt. xx to ʒ i; water, ℥ iv; M. Sig. Dose one teaspoonful every hour.

Antimonii et Potassii Tartras—Tartar Emetic.

Tartar emetic, in very small doses, is a useful remedy in acute bronchitis, and in most congestive and spasmodic affections of the larynx and bronchi.

"The simplest indication for the *minute* dose of this remedy is increased secretion of the respiratory mucous membrane. To this may be added, a feeble pulse, pallid skin, cool extremities, cold sweats, uneasiness in the lower abdomen, and frequent desire to go to stool and urinate. If we were giving it in the old-

fashioned dose, the indications would be the reverse of this. It is successfully used in croup, bronchitis with free secretion, in bronchorrhea, humoral asthma, and in pneumonia with abundant secretion." (Scudder.)

Tartar emetic is expectorant, diaphoretic, emetic and cathartic. In the small doses provided for in the "Usual Prescription" this remedy has no injurious effects. In large doses it acts as a violent poison.

Indications.—Difficult breathing, with wheezing; hollow and barking cough; hoarseness; stridulous breathing.

Dose.—1-16 of a grain to 2 grains (the latter is emetic).

Usual Prescription.—℞ Tartar emetic, gr. ss; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Apis Mellifica—Tincture of the Honey Bee.

Indications for apis are frequently found in diseases of the skin, and also in diseases of the bladder and urethra. Women are sometimes afflicted with sensations of heat and burning pains in the bladder and urethra, accompanied by an almost constant desire to urinate. In this unpleasant condition apis is a most efficient remedy; in fact, in any case where there is itching of the genitals, with heat and burning pains in the urethra, accompanied by a frequent desire to urinate, it is a most useful remedial agent.

In amenorrhea, menorrhagia and leucorrhea, with acute congestion of the ovaries, apis is a potent remedy, and it also constitutes a useful medicament in vesicular erysipelas.

In urticaria, or "hives," when there is the usual itching or soreness, this drug can be employed with confidence that it will exert a decidedly curative influence. In the treatment of diseases exhibiting a tendency to dropsy and in rheumatism when there is a blanched puffiness and severe stinging pain, apis renders excellent service. It is also of decided value in edematous conditions of the throat.

In suppression or retention of urine (unless there is a stricture) apis has no superior in our materia medica. When continued for some time it increases the secretion of urine, and it is, therefore, a medicament to be considered in the dropsy attendant upon structural diseases of the heart. While it cannot be expected to cure such wrongs, it will afford a relief which will be highly appreciated.

"The tincture of the honey-bee is an excellent remedy if the diagnosis is well made. Given the peculiar burning pain that one associates with the sting of the bee, and I should think of this remedy. Burning pain with itching in the urethra, in the bladder, or any part of the surface, is met by apis." (Scudder.)

"The indications for apis are—edema, with itching, burning, and smarting of the parts. While apis is now frequently prescribed by the writer, it was not so in former years. Having somehow become imbued with the idea that the remedy was worthless, suggestions from those who recommended it were received with a feeling of indulgent incredulity, and thus stubborn skepticism deprived me of a valuable weapon against disease. Within recent years apis has been given in edema, when accompanied with itching, burning and smarting, and has relieved the condition wherever situated.

"Edema is only a symptom, the causes being varied. It may result from cardiac, renal or hepatic affections, thrombosis, embolism, chlorosis or anemia. Judgment and reason must be exercised in the treatment of disease, and we should not expect to cure dropsy when caused by incurable lesions. Yet some cases have been cured by apis and iron, in which there was evident heart complication, as shown by cardiac irregularity, palpitation, dyspnea, anemia, and great general distress, with tissues soft, pitting deeply upon pressure.

"Apis will relieve edema when there is smarting, burning and itching in the parts. It will relieve the smarting, burning and itching in chronic leg ulcers, if the parts are edematous. Conjunctivitis with burning, smarting and itching in the eyelids and surrounding tissues, if accompanied by edema, will be relieved by apis. Apis will relieve like conditions in erysipelas. It will relieve these symptoms in the urethra when accompanied by edema in any part of the body. It is not so effective in gonorrheal smarting, nor in cystic irritation, nor in irritation from acrid leucorrheal discharges, but it will sometimes afford relief.

"This remedy is recommended by many writers for various conditions, and has been used at intervals for almost a century. I have never found it of any special value in any condition, unless there was edema with burning, smarting and itching. With these indications, no matter what the disease, it has been found effective." (Watkins.)

"We who practice specific medication are frequently surprised at the results of certain of our remedies when specifically used—surprised even though we give the remedy with the intention of securing the results which actually occur. It is a pleasant surprise—so much so that one feels happy to see such certainty follow his efforts to use medicines intelligently.

"Not long since, we treated a case of sore throat, having, as

we believed, specific indications for a remedy. The patient, a woman of fifty-six, was taken with a chill, followed by an exceedingly sore throat and marked prostration. A physician was called, who gave medicine to stimulate her heart, which, as alleged, had been behaving badly. For the sore throat a warm solution of sodium bicarbonate had been directed to be used frequently as a gargle. The symptoms all became rapidly worse, and it now being the evening of the second day, we were called to see the case because the physician in charge was otherwise engaged and could not call that evening. Upon attempting to examine the throat, the patient had great difficulty in opening the mouth. After depressing the tongue, the pillars of the fauces appeared like two pear-shaped sacs of water, and were very tender and painful. For the pain and soreness a wash of hamamelis in hot water was advised, and for internal treatment teaspoonful doses of a solution of ten drops of specific apis in a half glass of water were given every half hour. Relief came quickly, and the edematous tissues were reduced completely in twenty-four hours. This brings to mind a similar case in an older woman, which was just as promptly relieved by apis." (Felter.)

"Apis is a very efficient remedy in retention of urine, and in some cases of irritation of the urethra; also for inflammation of subcutaneous structures, with tensive and lancinating pains, and in irritation of the skin.

"I have seen a number of cases of disease in women, characterized by sensations of heat and burning pains in the bladder and course of the urethra, with frequent desire to micturate. These have been promptly relieved by the use of specific apis, and in two cases of chronic disease of long standing a permanent cure was effected following the relief of these unpleasant symptoms. A peculiar burning pain, that one associates with the sting of the bee, is the indication.

"Apis is particularly useful in post-scarlatinal dropsy, when there is a blanched puffiness of the skin and the peculiar burning or stinging of the surface. We have no better remedy for simple uncomplicated urticaria, with intense itching and soreness, than specific apis in fractional doses. The direct indication for apis is constant desire, but inability to urinate freely, the urine being deep-red."

Apis mellifica is a very efficient diuretic.

Indications.—Itching, with burning of any part, hot, dry, burning and itchnig surfaces; suppression and retention of urine; dropsical conditions; constant desire to urinate, with inability to do so; irritation of the urethra, with burning, stinging pain;

inflammations of the subcutaneous structures, with burning, stinging, tensive or lancinating pains.

Dose.—Tincture, 3 drops; specific medicine, 1-10 to 2 drops.

Usual Prescription.—℞ Apis, gtt. v to xx; water, ℥ iv. M. Sig. Dose one teaspoonful every hour or two.

Apocynum Androsæmifolium—Bitter Root.

In small doses bitter root is used as a stimulant to the digestive apparatus, and through its action on the digestive organs a corresponding impression is made on the general system. It has also been found useful in some forms of rheumatism and in diseases of the liver.

It is probable that the apocynum androsæmifolium possesses properties identical with those of Indian hemp, and as the distinction is recognized with difficulty, even by those most conversant with botanic medicines, they have been used indiscriminately.

Apocynum androsæmifolium is diaphoretic, tonic, laxative, and in large doses emetic.

Indications.—Chronic hepatic affections; intermittent fever and the low stage of typhoid fever; dropsical affections.

Dose.—Fluid extract, 5 to 20 drops.

Usual Dose.—10 to 15 drops.

Apocynum Cannabinum—Black Indian Hemp.

Apocynum is extensively employed in dropsy, and when administered in accordance with the specific indications herein given it is one of our most certain and valuable remedial agents. By its use the absorbent system is stimulated and tone imparted to the blood-vessels, thus removing the edematous infiltration and preventing further exudation. It is of special value in dropsy of an atonic character. Apocynum is also frequently indicated in rheumatism, rheumatic neuralgia, diseases of the joints and diseases of the mucous membranes. In sciatica it is a remedy of curative power.

"The apocynum is a true *specific* for that atonic condition of the blood-vessels that permits exudation, causing dropsy. I have employed it in my practice for some eighteen years, and it has not failed me in a single case where the diagnosis was well made.

"It is a positive remedy for dropsy, whether it takes the form of edema, anasarca, or dropsy of the serous cavities, where there is no obstruction to the circulation and no febrile action. We would not expect to effect a cure in dropsy from heart disease, or ascites from structural disease of the liver, neither would we where there was a frequent, hard pulse and other evidences of febrile action. Still in these cases, if we can partially remove the obstruction in the first case, and after an arrest of febrile action in the second, the apocynum will remove the deposit.

"It is not worth while to inquire how it removes dropsical accumulations. It seems to strengthen the circulation, and as absorption takes place there is an increased flow of urine.

"I have also employed the apocynum in cases of passive menorrhagia with advantage. It may be especially recommended in those cases in which the flow is constantly too profuse, too long, and too frequently repeated.

"It has been used as an antirheumatic, with excellent results in some cases. With this, as with many other remedies, there are special symptoms indicating its use. If these are found in any disease, the remedy becomes specific. Thus in rheumatism, if there is a tendency to edema, even slight puffiness of the skin, or a peculiar blanched, glistening appearance, the apocynum will be found a valuable remedy.

"Following these indications I have used it with excellent results in some chronic diseases, especially where pain was a prominent symptom.

"I have already spoken of it as a remedy for menorrhagia. It will also be found a valuable remedy in chronic metritis, with uterine leucorrhea. In one case with profuse watery discharge from the uterus, it proved curative after other plans of treatment had failed." (Scudder.)

"To say that apocynum is a specific in all cases of dropsy would be ascribing to this agent more than can be said of any agent in the materia medica. We believe in specifics only as they correct specific pathological wrongs; and since there are varied conditions in this as in all disease, no one agent can meet all conditions and prove to be specific for the disease.

"We divide dropsy, whether idiopathic or symptomatic, into active and passive, the two conditions being directly opposite; the treatment for the one would not be beneficial in the other, but might prove harmful. In active dropsy we have the quick, hard pulse, irritation of the nervous system, dry, furred tongue, dry skin, scanty secretion of urine, with constipation. This form is usually the sequel of fevers or inflammation, or occurs during their progress, and may show itself quite rapidly, first in the eyelids, face and upper extremities. In this case we select the proper sedative, aconite or veratrum, to control the circulation.

We may associate with these the specific tincture apocynum in the small dose—ten drops to half a glass of water. As the pulse comes down, the irritation of the nervous system gives way, the skin becomes relaxed, and we have the system prepared for the administration of diuretics. In this case, to begin the treatment with the decoction of apocynum, or any other diuretic, would be worse than useless.

"The large majority of cases, however, that the physician is called to treat, is passive; whether as anasarca, ascites, hydropericardium, hydrothorax, or wherever it may be, we find enfeebled functional activity—the circulation feeble, the surface cool and pallid, skin doughy and relaxed, deeply pitting on pressure, but cold, with marked edema, urine scanty and high-colored. It is in these cases that the decoction of apocynum is the remedy *par excellence*. The tincture is not so efficient in these cases. As a diuretic and hydragogue cathartic it has no superior. To two ounces of the fresh crushed root add one pint of water, and boil until there is six or eight ounces of the decoction. Strain, and add half an ounce of alcohol or glycerine, as fermentation soon takes place. Of this give five drops every four hours, gradually increasing the dose as the patient is able to retain it, till the maximum dose is reached, namely, a teaspoonful four times per day. Some patients cannot take or retain more than five or ten drops at a dose; but even here the remedy is efficient, though not so much so as where they are able to take the large dose. If it act too freely on the bowels, lessen the size or frequency of the dose.

"Even when the dropsy is the result of disease of the heart, its action is very marked. I do not mean to say that it will cure where there is structural heart disease, but it will carry off a large quantity of water by way of the kidneys, relieve the difficult breathing, and permit the patient to sleep." (Thomas.)

"The specific action of apocynum is upon the blood-vessels and heart, restoring their natural functions when the former are in that condition that readily allows of transudation of serum into the tissues. It is scarcely necessary to allude to the fact that such a condition is one of debility. It is a remedy for effusion when due to obstruction of the circulation. This condition may be known by the puffy eyelids, the swollen feet and ankles, the distended scrotum and the ascitic abdomen, all of which pit upon pressure. The skin is tight, smooth and glistening, usually blanched, but may show pinkish streaks. If such disordered condition depends upon incurable or malignant diseases of the heart, liver or kidneys, a cure cannot be expected, but in most instances an amelioration of symptoms, and particularly a notable decrease of the watery accumulations, may be reasonably hoped for. But in functional disorders with watery

infiltration, and due chiefly to vascular weakness, it is a remedy that will prove its worth to the most skeptical. It matters little whether edema accompanies rheumatism, sciatica, arthritis, renal or hepatic obstruction, or the congestive pelvic ailments of women, the edema disappears and the concomitant disorder is invariably benefited by apocynum in small doses. In certain cardiac disorders, both organic and functional, it accomplishes great good, as is shown by the results of its use in mitral and tricuspid regurgitation, with rapid and feeble cardiac action, low arterial tension, cough, dyspnea, pulsating jugulars, general cyanosis, high-colored urine and general dropsy. The chief indication, then, for apocynum is watery infiltration of the tissues, with weak circulatory action and general debility. Others are: Skin blanched, full, smooth and easily indented; puffiness under the eyes; wrinkling of the lids, as if the parts had recently been swollen; feet full and edematous, pitting upon pressure; constipation, with edema; urine scanty and circulation sluggish; profuse and long-continued menorrhagia; boggy, watery uterus; full, relaxed uterus, with watery discharges; passive hemorrhages, small in amount and associated with edema; mitral and tricuspid regurgitation, with rapid and weak heart action, low arterial tension, difficult breathing, cough, and tendency to cyanosis." (Felter.)

Apocynum cannabinum is diuretic, diaphoretic, alterative, tonic, cathartic, emetic and vermifuge. In very large doses it causes vomiting and large watery discharges from the bowels, with general perspiration.

Indications.—Edema of cellular tissue; swelling of the feet; fullness of the eyelids and puffiness under the eyes; copious yellow or brownish diarrhea.

Dose.—Fluid extract, 1 to 20 drops; specific medicine ½ drop to 20 drops.

Usual Prescription.—℞ Apocynum, gtt. x to ʒ i; water, ℥ iv. M. Sig. Dose one teaspoonful every three hours.

Apomorphinæ Hydrochloridum—Apomorphine Hydrochloride.

In all cases in which prompt emesis is necessary apomorphine is the most efficient drug known to the medical profession. In from five to twenty minutes after it has been administered—according to the amount used and the manner of its employment—vomiting occurs, and in some instances is repeated three or four times at intervals of fifteen or twenty minutes. The emesis is preceded and attended by but slight nausea and followed with

little depression. Apomorphine is a direct or systemic emetic, and in so far as its systemic action is concerned it should always be remembered that it is a derivative of morphine. One of its great merits, in addition to its rapidity of action, is the ease with which it can be administered in cases where swallowing is difficult or impossible. It is, therefore, exceedingly useful in cases of poisoning. In morphine poisoning, however, it is contra-indicated. An occasional case of poisoning is seen in which the vagus is so blunted by the poison that apomorphine fails to produce emesis. In acute inflammation of the stomach, whenever an emetic is required, this drug is preferable to any other emetic. When given as an emetic apomorphine should always be administered hypodermically, and the solution should always be freshly prepared. Like some other systemic emetics—ipecac, for instance—apomorphine in very minute doses will often relieve persistent vomiting.

In acute bronchitis apomorphine, in doses of 1-40 grain to 1-20 grain, given by the mouth, is a very efficient remedy. It is also exceedingly useful as a means of relieving the dry, hacking cough of chronic bronchitis, chronic catarrhal pneumonia and tuberculosis. When used as an expectorant it should always be given by the mouth. In administering the drug to children a considerable care should be exercised, as they do not always bear it well.

Large doses of apomorphine stimulate the brain, and have even caused delirium. It has frequently caused unconsciousness, and in some cases convulsions have been produced by very large doses. Small doses have no marked effect upon the circulation, but full doses increase the rapidity and force of the heart's action. Toxic amounts of the drug depress the circulatory system or paralyze the cardiac muscle. Small doses do not affect the respiratory movements, although the secretion from the bronchial membrane is increased. Full doses increase and deepen respiration, but toxic doses cause a depression like that caused by morphine.

Apomorphine is readily absorbed, and is excreted through the gastro-intestinal tract as well as by the broncho-pulmonary membrane, the kidneys and the skin.

The symptoms of poisoning by apomorphine are violent vomiting, delirium or convulsions, and cardiac and respiratory de-

pression, death resulting from asphyxia. The approved treatment for this form of poisoning is the same as that employed in poisoning by morphine.

Apomorphine is an expectorant and a reliable emetic.

Indications.—Apomorphine is a certain and speedy emetic, causing vomiting in from five to twenty minutes, and without nausea or any general symptoms. Its subcutaneous use is preferred in all cases in which a speedy emetic is indicated, as in laryngeal croup and in narcotic poisoning, or where the use of the stomach pump is inadvisable. For cutting short epileptic attacks, a hypodermic injection may be given immediately upon the appearance of the aura.

Dose.—The maximum doses of apomorphine are as follows: 1-20 to 1-10 grain by the mouth; 1-25 to 1-6 grain hypodermically; 1-30 grain as an expectorant; 1-10 grain as an emetic.

Aralia Hispida—Dwarf Elder.

Dwarf elder exerts a very decided influence upon the circulation, and probably acts through the sympathetic nervous system. Its action upon the secretions is unmistakable. It quiets irritation of the urinary tract and increases the flow of urine. In anasarca and ascites it has often been employed with corrective results.

"Aralia hispida is an active remedy and worthy of close attention. Its chief action is as a diuretic, and in this line it is in certain cases the equal of apocynum and some other noted hydragogues. When given in too large doses it is emeto-cathartic. It is also said to have some alterative properties. We doubt whether it is any more alterative than any remedy that rights some of the wrongs of the body, allowing the body to do its own house cleaning and repairs.

"Dwarf elder is a remedy usually in chronic disease. It is an excellent agent when dropsy of the cavities of the body is present. It will carry away an immense amount of water, both through the urinary apparatus and by overcoming any torpor of the bowels that may be present, relieving the body of a great amount of fluid through this channel. It may be aided materially by simultaneous administration of cream of tartar.

"Dwarf elder is a most excellent remedy in many cases of irritation of the urinary apparatus. Though an active diuretic, unlike some other remedies, it relieves, instead of producing irritation of the urinary tract. This adds much to its value as a medicament. It is a remedy for suppression of urine; for

this use it is the equal if not the superior of santonin. It may be given to children as well as adults. Dwarf elder has been recommended as a remedy for scrofula and syphilis. In our opinion, it is of little avail beyond its diuretic effect, as set forth above. Two drachms of the specific medicine are to be added to four fluid ounces of water. Of this mixture the dose is a teaspoonful every one to three hours. The infusion of the fresh shrub is the equal of alcoholic preparations generally. Cream of tartar or any other diuretic may be used in combination or alternation with aralia hispida."

Aralia hispida is diuretic, alterative, cathartic and emetic.

Indications.—Dropsy of cavities; irritation of the urinary apparatus.

Dose.—Fluid extract, 5 to 20 drops; specific medicine, 5 to 20 drops.

Usual Prescription.—℞ Aralia, 5 ii; water, ℥ iv. M. Sig. Dose one teaspoonful every three hours.

Aralia Racemosa—Spikenard.

Aralia has a special affinity for the respiratory organs, and has long been used with much success in chronic pulmonary diseases. In asthmatic breathing and in the early stage of bronchitis it is a useful remedy. In chronic catarrh, some forms of rheumatism, and enlargement of glands, its action is also satisfactory.

In chronic complaints of the uric acid and gouty diathesis, and in syphilis, it increases waste, aids in the removal of morbific products from the system, and gives tone to all the organs.

"Its sphere seems to be essentially in the pulmonary field. It is a most excellent remedy for cough when it is wheezy and accompanied by constriction of the chest and the expectoration of much tough, stringy mucus. It can be given alone, or it may be combined with, or alternated with, other so-called cough remedies that are indicated. However, *one* remedy, rightly chosen, is the best remedy, and the day will come when *only one* remedy will be given at a time. We hope to live to see that day.

"Spikenard is an excellent remedy for the irritation of the mucous membrane so frequently found in chronic pulmonary affections. It is a remedy for bronchial catarrh, bronchitis and chronic pneumonia.

"Spikenard has been recommended as an alterative in rheumatism, syphilis and in phthisis, and in chronic skin affections, but we believe there are better remedies for these affections."

Aralia racemosa is tonic, stimulant, alterative, diaphoretic and expectorant.

Indications.—Acrid leucorrhea with offensive odor; suppression of menses from cold; suppression of the lochia, with pain in the uterine region; indolent and fetid ulcers; dysmenorrhea; scrofulous enlargement of glands; chronic catarrh; irritation of the bladder with scanty urine; dry, wheezing coughs, with difficult inspiration; sense of suffocation and soreness behind the sternum; cough and irritation of mucous surfaces in chronic pulmonic and catarrhal affections.

Dose.—Fluid extract, 5 to 40 drops; specific medicine, 5 to 40 drops.

Usual dose.—10 to 15 drops.

Areca Catechu—Betal Nut.

This remedy has been highly recommended as a means of expelling tape worms. It has also been employed as a vermifuge for young dogs, in doses of two drops of the fluid extract for each pound of the animal's weight. Whether used as a vermifuge for human beings or animals, the bowels should first be cleansed by fasting and castor oil.

Areca catechu is astringent and vermifuge.

Indications.—Tape worms; intestinal worms in man or animals.

Dose.—Fluid extract, 1 to 2 drachms. The dose given is that required for the expulsion of worms.

Argenti Nitras—Nitrate of Silver.

The solution given in the "Usual prescription" should be used with care, as it will stain the lips and teeth. Externally the nitrate of silver is considerably used in from 1 to 5 per cent. solutions. Subacute and chronic catarrh of almost all the accessible mucous membranes, ulcers of the mucous membranes, and sluggish ulcers with bleeding granulations, are among the most common conditions calling for the local use of this agent.

The nitrate of silver is tonic, astringent, antispasmodic and escharotic. In large doses it is a corrosive poison, destroying the tissues with which it comes in contact.

Indications.—Chronic diarrhea, with discharges of pinkish mucus streaked with bright blood; chronic intestinal catarrh;

gastric ulcers; dysentery; gastralgia.

Dose.—1-12 to ½ grain, from one to three times a day, in pills.

Usual prescription.—℞. Nitrate of silver, gr. iv, water, ℥ iv. M. Sig. Dose one teaspoonful every two hours.

Aristolum—Aristol.

Aristol is an antiseptic which favors cicatrization, and is often used as a substitute for iodoform.

Indications.—Externally (in 3 to 10 per cent. ointment with vaseline); varicose ulcers; parasitic eczema of the thighs; lupus exulcerans; soft chancre; psoriasis; mycosis capillarum; tertiary syphilitic ulcers. Insufflation (the pure powder): rhinitis; naso-pharyngitis; laryngitis; specific ozena. After the insufflation a tampon impregnated with a 10 per cent. ointment should be passed into the nostril.

Arnica Montana—Leopard's Bane.

This agent is useful in all conditions in which a spinal stimulant is needed. It is a remedy of value in diseases where there is a lack of ability to control the urine and feces, and it often exerts a corrective influence in anemias, when no inflammatory symptoms are present.

Arnica is said to be a very efficient remedy in amaurosis, or paralysis of the optic nerve. In low forms of typhoid fever, diarrhea and dysentery it is often employed with marked advantage, and in pneumonia with dry tongue covered with foul mucus, accompanied by great depression, and low muttering delirium, it affords marked relief. It is also a remedy of usefulness in hectic fever, especially when there is colliquative sweating or diarrhea, and in muscular soreness from strains or overexertion it constitutes a very reliable medicament. In gout and rheumatism, especially when the pulse is very slow and weak, it is a useful drug, and in nervous headaches it is often used with advantage.

As a local application in strains and bruises, arnica is a very efficient agent.

"Arnica is a *specific* stimulant to the spinal nervous system and will be found useful where there is want of innervation from this. I have seen most marked benefit from it in advanced

stages of disease, where there was feeble respiratory power; difficulty of sleeping from impeded respiration; want of control over the discharge of urine and feces, etc., evidences of impairment of spinal innervation. In such cases its beneficial influence may be noticed in a few hours.

"I have frequently prescribed it for lame back, backache, and feelings of debility and soreness in the small of the back. It is only useful in those cases where there is feebleness, with deficient circulation; but in these the influence is direct and permanent." (Scudder.)

"It is as an internal remedy that we especially desire to recommend arnica in this paper. Like many others of our best remedies, when given in excess it is an acro-narcotic poison, producing vomiting, convulsions, great cardiac depression, muscular weakness, slow and shallow respiration, death. Its antagonists, hence its antidotes, are atropine, ammonium, alcohol, opium and camphor.

"Small doses of arnica stimulate digestion. Large doses cause nausea, vomiting and diarrhea. Small doses are tonic to the heart's action, while large doses depress the circulation and lower the temperature. Small doses act kindly upon the nervous system, while large ones cause severe headache, depression, paralysis, coma, convulsions and collapse. Small doses stimulate or accelerate respiratory efforts; large ones depress them.

"As a medicament, then, in doses of a proper size, we will say that arnica is the *indicated* remedy when we desire a stimulant to the cerebro-spinal nervous system; when we desire an increase in the functional activity of the whole urinary tract; when the heart and the skin both need stimulation. It will, then, be especially beneficial in any disease, and particularly in the advanced stages of many diseases, when there is coldness, depression, want of respiratory power, and even a loss of control over the sphincters guarding the excretory outlets of the body. In milder conditions arnica is *the* remedy in any disease when there is an unpleasant or even extreme soreness or tenderness about a part or any of the tissues, as though they had been bruised, and this sensitiveness is aggravated by touch or motion.

"With these ideas of the use and action of arnica constantly before us, it becomes a most efficient remedy in the treatment of those cases of headache accompanied by depression, etc. In pneumonia of an asthenic type, with enfeebled circulation, coldness of extremities and surface, etc., give arnica internally in small doses, and especially if it be accompanied by typhoid conditions, great exhaustion, and there is an absence of expectoration. In mania, delirium tremens, and other nervous disorders where there is an absence of excitement and there are present feebleness, coldness and depression, arnica will prove its activity

as a remedy if properly given. The same may be said of it if it be given in diarrhea or dysentery with these conditions existing, and the discharges are large and of foul odor.

"Arnica is the same efficient remedy in hectic fever, in so-called 'putrid fever' when there is depression—dry tongue, nausea, slimy, foul emesis—a complication of unpleasant gastric disturbances. Arnica is a most valuable remedy in the exhaustion due to sexual excesses or abuse when accompanied by the characteristic depression. We believe that in many cases it is superior as a remedy to the vaunted phosphorus, and we are sure that it is much more pleasant to take.

"We would suggest the use of arnica in fair-sized doses as a part of a 'whisky cure' formula, or that it be given alone for the cure of drunkenness. It would certainly be indicated in the exhaustion and depression that follows continued or severe epistaxis or hemoptysis, or any other passive hemorrhage. Arnica, owing to its stimulating effects, both local and general, will give direct results in the treatment of paralysis of the bladder following rheumatism or other depressing maladies. Its administration will lessen the amount of urea in the urine and prevent uremic intoxication. It is also highly praised as a remedy for amaurosis.

"Give arnica internally in any disease in which there is depression, pain, soreness, etc., and especially in the treatment of minor ills like sprains, contusions, backaches, dysmenorrhea, amenorrhea, acute or chronic metritis, etc., and you will certainly be pleased with the results that follow.

"The internal use of arnica is contraindicated by an excited nervous system, by any gastro-intestinal inflammation, by fatty or valvular heart troubles, and by asthmatic conditions.

"When it comes to the recommendation of arnica as a local remedy, we are in doubt whether it adds at all to the efficacy of the rubbings, and the alcohol carrying it, or to the heat and moisture, when the infusion is employed. However, many of much greater experience highly extol its virtues in this respect. This is sure, its local use provokes in some people violent cutaneous inflammations and even marked constitutional symptoms.

"It has more or less reputation among all physicians as a local application to sore nipples, bruises and sprains, and external inflammations generally. It has had too general an application. We would limit its local use, as we do its internal administration, to those cases only in which there is no fever or active inflammatory manifestations. Certainly a distinction between sedatives and stimulants is just as necessary in outward or local medication as it is in the internal use of remedies." (Bloyer.)

Arnica montana is stimulant, diaphoretic, diuretic, emmenagogue and narcotic.

Indications.—Shortness of breath from intercostal pain; bruises from blows and falls; acute superficial inflammations, as in boils; diseases characterized by debility, torpor and inactivity; prostration resulting from injuries; any condition showing depression.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual prescription.—℞. Arnica, gtt. v. to x, water, ℥ iv. M. Sig. One teaspoonful every hour or two.

Arsenici Iodidum—Iodide of Arsenic.

The iodide of arsenic often constitutes a much needed medicament. In nasal catarrh it exerts an improving influence, and in hay fever it has been used with beneficial results. It is also deemed a remedy of value in influenza, and in otorrhea and corrosive leucorrhea it is corrective in its action.

The iodide of arsenic combines the effects of arsenious acid and iodine, and in its use great caution should be exercised. It is nervine and alterative. In large doses it is a violent poison.

Indications.—Irritating and corrosive discharges of the mucous membranes; dry scaly conditions of the skin.

Dose.—1-24 to ⅛ of a grain.

Usual dose.—1-100 of a grain in a pill or tablet.

Arsenitis, Liquor Potassii—Fowler's Solution.

In intermittent fever, when the tongue is dry and pointed, arsenic in minute doses is a curative agent of great power. It is also a good remedy in chorea, epilepsy, neuralgia and cardialgia. Chronic skin diseases, especially psoriasis, old and extensive eczemas, and all chronic skin diseases characterized by infiltration of the cellular tissue and scale formations, are successfully treated by the judicious use of small doses of arsenic. It is also a superior remedy in non-inflammatory diseases of the respiratory and digestive mucous membranes or their nerve supply, such as atonic diarrhea, chronic catarrh of the bronchi and the pulmonary mucous membranes.

"The arsenical fever bears a very close resemblance to *quinism,* or *quinine poisoning,* in its symptoms, though there is not, in a majority of cases, such disturbance of the nervous system. There is also a difference in the termination, for whilst in

quinism there is continued dryness of skin and scanty high colored urine, and finally death from uremia, in chronic poisoning by arsenic there is finally a stage of relaxation, and though there is dropsy, the skin and kidneys act freely.

"We have long since determined that the mere matter of dose in medicine might be the difference between a poison and a remedy. If, for instance, we give one grain of strychnia, we poison our patient, whilst if the dose had been but the fortieth or thirtieth of a grain, it would have proven a vital stimulant. If we administer five grains of morphia, the result is death; whilst a medicinal dose of one-fourth of a grain would have produced refreshing sleep. If we give large doses of aconite (say five drops of a tincture of the root), frequently repeated, it increases the frequency of the pulse, impairs the circulation, and irritates the nervous system. But, in medicinal doses, it lessens the frequency of the pulse, gives freedom to the circulation, and relieves irritation of the nervous system. If we give large doses of veratrum, it impairs the circulation, arrests vital processes, and produces death; whilst medicinal doses give increased freedom to the circulation and diminish the frequency of the pulse.

"It seems strange to me that these things have not had due consideration, and that the remedial action of drugs has not been kept distinct from their poisonous effects when given in large doses. We have already seen that the dose of medicine should be the smallest quantity that will give the desired influence, and that in a rational system of medicine, its influence should always be to restore normal function, and not as a disturbing element.

"There is another view of this subject which is important in this consideration. A drug which may be poisonous in health, or in some conditions of disease, will be curative in other conditions of disease. Thus we regard the disease as antagonizing the remedy, quite as much as the remedy antagonizes the disease, and the influence is toward the restoration of healthy function. Give a healthy man almost any of our common medicines, and after a time he will become diseased, the disease being of that kind and of that part which the medicine cures. Thus, if we give quinine to cure malarial fever, its influence is kindly, but if there is no malarial disease it causes irritation of the nervous system. If we give belladonna when there is an enfeebled capillary circulation, the influence is kindly and curative, but it is the reverse if we already have capillary spasm.

"This is especially the case with the more powerful remedies, with which arsenic should be classed, and they should never be employed unless the symptoms indicating them are very distinct.

"In *small* doses, and when indicated, arsenic may be regarded as a vital stimulant, and one of the most powerful of this class.

But we must not forget that the dose *must* be small, and there *must* be special indications for its use. What are these indications?

"In that condition of the blood, and of nutrition, where there is a tendency to the deposit of a low or imperfect albuminoid material—yellow tubercle, caseous deposits—or degeneration of tissue, arsenic may be used as a blood-maker, and especially to improve nutrition.

"A class of skin diseases depending upon such deposits, or on enfeebled nutrition, is cured by arsenic. Among these are the more chronic affections—the squamæ, the chronic vesiculæ, some of the pustulæ, and the tuberculæ. It will not cure all cases, it will do harm if injudiciously used, but it affords relief in many otherwise intractable.

"But, it should never be employed where there is irritability of the nerve centers, and especially of the sympathetic. This rule I think is absolute, and must be constantly regarded. Arsenic is a *nerve-stimulant;* quite as much so as phosphorus, with this addition—that its action is greatly intensified when there is already erythism of the nerve centers.

"Arsenic may be employed in the treatment of some cases of intermittent fever with excellent results. They are those marked by impairment of sympathetic innervation, and with a general want of nervous excitability. The dose should be very small, gtt. v to x of Fowler's solution to ℥ iv of water; a teaspoonful every two or three hours. I have used the Homeopathic pellets, medicated with Fowler's solution, and though the dose was not more than the twentieth to the one-hundredth of a drop, the effect was marked, where specially indicated.

"It is also used with advantage in atonic diarrhea, with indigestion, the conditions being as above named. Especial benefit has been observed in those cases in which there were periods of great depression, followed by hectic fever.

"I need hardly say in conclusion that arsenic is one of those agents that will do either good or harm. Good if given in the proper case, and in medicinal doses; harm if not indicated by special symptoms, or contra-indicated as above named, or if given in poisonous doses." (Scudder.)

Arsenic in small doses is a vital stimulant, tonic, nervine, alterative and antiperiodic. In large doses it is a violent poison.

Indications.—Imperfect nutrition, with glandular deposits; degeneration of tissue; tendency to the deposit of low or imperfect albuminoid material; skin diseases depending upon enfeebled nutrition; epidermis dry; skin inactive and lacks elasticity; eczematous eruptions; dry and pointed tongue; cardialgia.

Dose.—3 drops three times a day, gradually increasing to 10 drops three times a day.

Usual prescription.—℞. Fowler's solution, gtt. v to x, water, ℥ iv. M. Sig. Dose one teaspoonful every two or three hours.

Artemisia Absinthium—Wormwood.

Artemisia is sometimes employed in atonic dyspepsia with good results, and in flatulent colic it is often used with advantage. It is deemed an efficient agent for the removal of lumbricoides and other worms. In intermittent fever its influence is exerted in a curative direction. Wormwood undoubtedly possesses decided medicinal properties.

"When given in moderate doses wormwood promotes the appetite and digestion, quickens the circulation and imparts to the whole system a strengthening influence. It is given in all cases requiring the administration of tonics; in dyspepsia and other atonic states of the intestinal canal, in certain cases of amenorrhea, chronic leucorrhea, and in obstinate diarrhea, depending upon debility of the membranes of the intestines. It is often administered in intermittent fevers with complete success. It is likewise given as an anthelmintic." (Beach.)

Artemisia absinthium is tonic, antiperiodic, anthelmintic and narcotic. In very large doses it frequently irritates the stomach and increases the action of the heart.

Indications.—Loss of appetite in atonic dyspepsia; amenorrhea; chronic leucorrhea and obstinate diarrhea; intermittent fever; jaundice; intestinal worms.

Dose.—Fluid extract, 5 to 60 drops.

Usual dose—5 to 10 drops.

Arum Triphyllum—Indian Hemp.

Indian turnip has been used with satisfactory results in chronic laryngitis, and in bronchitis its influence has been deemed beneficial. In asthma and whooping-cough it is also a useful remedial agent, and in affections connected with a cachectic state of the system it has often been employed with good results.

Arum triphyllum is expectorant, diaphoretic and stimulant to all the secretions, especially those of the skin and lungs. Externally it is an irritant.

Indications.—Sense of fullness, and swelling of the throat and tongue; difficult expectoration, owing to an enfeebled or atonic condition of the respiratory apparatus; severe sore throat, with bleeding and marked fetor; inflammatory swelling of the tissues of the mucous surfaces of the mouth, fauces and air-passages, with pricking, stinging pains and burning discharges; non-inflammatory affections of the same parts when the tissues are relaxed and full, or secreting profusely; hoarseness and rawness in the larynx, especially in public speakers.

Dose.—Fluid extract, 10 to 30 drops.

Usual prescription.—℞. Arum triphyllum, gtt. x, water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Asarum Canadense—Wild Ginger.

Wild ginger has a stimulating influence on the mucous lining of the intestinal tract and on the skin. It also stimulates the muscular structure of the womb. It has been employed as a parturient and in amenorrhea, and with satisfactory results.

Asarum canadense is stimulant, diaphoretic, expectorant and carminative.

Indications—Colic and other painful conditions of the stomach and bowels, when there is no inflammation; chronic pulmonary affections; dropsy accompanied by albumin in the urine.

Dose.—Tincture, 30 to 60 drops.

Asclepias Curassavica—Blood Flower.

This agent has been employed in gonorrhea and gleet with curative results, and in bleeding hemorrhoids it is often used with advantage. The juice of the plant has been employed as an enema in hemorrhage from hemorrhoids. The leaves will check capillary hemorrhage when bound on a recent wound.

Asclepias curassavica is astringent, styptic and vermifuge.

Indications.—Capillary hemorrhage; hemorrhage from hemorrhoids; gonorrhea, gleet and vaginal leucorrhea; intestinal worms.

Dose.—Fluid extract, 30 drops to 2 drachms.

Usual dose.—30 to 60 drops.

Asclepias Incarnata—Swamp Milkweed.

Swamp milkweed often promptly relieves the general distress caused by extreme infiltration of the tissues in dropsy. It strengthens the heart and markedly modifies the dyspnea. It is also a good remedy when there is pain in the chest and threatened inflammation of the lungs and pleura. In rheumatism from cold it is a remedy of considerable relieving power, and in chronic catarrh of the stomach it has often been employed with satisfactory results.

As a diuretic in dropsy this drug is of considerable value. It strengthens the heart and often relieves the distress caused by infiltration of the tissues, especially the difficult breathing.

"From the fact that it acts as a diaphoretic it is recommended as a remedy for coughs, colds, and rheumatic troubles of an atonic nature, and from the fact that it increases heart action it is highly recommended as a remedy for dyspnea, lung infiltration and asthmatic troubles. As a remedy for catarrh it lessens discharges and gives tone to the mucous membranes. It is a remedy for chronic nasal catarrh, leucorrhea and other below-par mucous fluxes.

"It is also a remedy for amenorrhea, and is said to be superior to asclepias tuberosa as an emmenagogue. It has been declared that it will produce abortion, but I doubt this statement."

Aclepias incarnata is diuretic, stomachic, anthelmintic, and, in very large doses, emetic.

Indications.—Catarrhal discharges; chronic gastric catarrh; catarrhal inflammation of the respiratory organs; dysentery and diarrhea; leucorrhea; rheumatism from cold; dropsies.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Asclepias incarnata, gtt. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour to every three hours.

Asclepias Syriaca—Silk Weed.

This plant possesses decided properties which should be fully and carefully investigated by the medical profession. It has been too much neglected. If its action in coughs, dropsies, dyspepsia, asthma, scrofulous and rheumatic conditions, amenorrhea and many other wrongs of life, were thoughtfully observed and faith-

fully recorded, much valuable knowledge would unquestionably be obtained.

Asclepias syriaca is tonic, diuretic, alterative, emmenagogue, stimulant and anthelmintic. In large doses it is purgative and emetic.

Indications.—Insufficient secretion of urine and urine which is deficient in solids; suppression or retention of urine; primary syphilitic disease; congestive headaches from suppression of urine or sweat; nervous headache followed by sweating and excessive urination; acute rheumatic inflammation of the large joints; hepatic, renal and cardiac dropsy; dropsy following scarlet fever.

Dose.—Fluid extract, 5 to 60 drops.

Usual Dose.—5 to 20 drops in cinnamon water or other pleasant vehicle to cover its unpleasant taste.

Asclepias Tuberosa—Pleurisy Root.

The best results are obtained from asclepias when the temperature is but moderately increased, and the skin is inclined to moisture, although it is many times of value during high fevers. Asclepias is a remedy of marked curative power in a wide range of abnormal conditions, but its extreme freedom from injurious effects under all circumstances has led many physicians to think it lacking in therapeutic power. If, however, such practitioners will test it in a severe case of pleuritic pain, administering from fifteen to thirty drops of the specific medicine in hot water, a few doses thus employed will remove from their minds all doubt of its medicinal properties. No other remedy, under such circumstances, can equal its relieving effects. In pneumonia, pleurisy, bronchitis and other wrongs of the respiratory organs, asclepias is employed with splendid results. When administered early it often constitutes the only needed medication. As a means of removing the effects of la grippe it is one of our most efficient remedies. If the effects are characterized by nervousness, it quiets the nerves, and if derangement of the stomach is a prominent feature, it relieves the stomach irritation, and thus makes for recovery.

In rheumatism asclepias exerts a decidedly corrective influence, and in nervous irritability its effects are markedly soothing in character. In insomnia, when given in hot water at bedtime, restful sleep is often secured through the influence of this medica-

ment. Coughs and colds also come within the curative range of asclepias, and in all forms of colic it can be prescribed with perfect confidence that its action will be positively beneficial. In all such cases it should be administered in very hot water—so hot that it has to be taken slowly.

While asclepias does not interfere with the action of other remedies, it is usually better to employ it singly, and if other drugs are needed use them in alternation.

"When given freely, it is one of the most certain diaphoretics we have, providing the pulse is not frequent and the temperature increased. Even in the small dose of one drop, following the use of the special sedatives, it will markedly increase the *true* secretion from the skin.

"Recollect that there is a difference between sweating and secretion. There may be a profuse exudation of water, the surface being bathed in perspiration, and yet but little secretion. Excretion by the skin is a vital process, and takes place by means of secreting cells. It goes on best where the skin is soft and moist, and not when covered with drops of sweat.

"I employ asclepias in diseases of children, believing that it allays nervous irritability, is slightly sedative, and certainly increases the secretion from the skin. I use it with veratrum and aconite, in febrile and inflammatory diseases, and in mild cases frequently give it alone." (Scudder.)

"No other remedy with which we are acquainted is so universally admissible in the treatment of diseases, either alone or in combination with other indicated drugs. In fact, we can think of no pathological condition that would be aggravated by its employment. It expels wind, relieves pain, relaxes spasm, induces and promotes perspiration, equalizes the circulation, harmonizes the action of the nervous system, and accomplishes its work without excitement—neither increasing the force or frequency of the pulse nor raising the temperature of the body. It is of especial service in the treatment of affections involving the serous membranes, as pleuritis, pneumonitis, etc. No one agent manifesting so little excitement in its operation is capable of successfully meeting so great a number of indications." (Grover Coe.)

"We desire to call attention to asclepias as a remedy for certain specific conditions or symptoms that cannot be met so well by any other remedy known to us. In any disease in which we may have a hot skin, either dry or with a tendency to moisture, a flushed face, a full, or even bounding pulse, with sharp pain that may be worse upon movement, asclepias becomes an efficient remedy. It can be used alone or in combination with other indicated

remedies. These symptoms frequently present in the early stage of catarrhal affections generally, in pneumonia, in pleurisy, in pleurodynia—in short, in chest affections particularly. Asclepias may be given with great reliance in pneumonia in the early stages, and especially in children. It may be given alone or in combination, or in alternation with other indicated remedies. It will act under these conditions as a synergist to any other indicated remedy. It is *par excellence* the child's remedy in chest affections. It deserves as much praise in the delayed appearance of exanthematous diseases, like rubeola, measles, etc. Asclepias is also a remedy in bronchitis and consumption. It will lessen the cough, and free the secretions, and act as a sedative. In coughs generally, that are tight and dry and constricted, if the direct cause cannot be located, asclepias should have due consideration as a possible remedy.

"In rheumatism, especially of the costal variety, and in neuralgia with suppressed secretions and symptoms as above, asclepias is the remedy. The same may be said of it in asthma with dryness, difficult breathing and a sense of constriction.

"Besides in these chest troubles, asclepias is an excellent remedy in digestive disturbances. With the symptoms above named predominating, it is very efficient in dyspepsia; in headache due to gastric troubles; in diarrhea, from cold, catarrhal, especially in children; in dysentery; in enteritis, etc. It has received the highest praise as a remedy in the distressing flatulent colic of babies. It has also been highly recommended in cases of 'nervous irritability' of children presenting the above symptoms. For many cases of syphilis and of scrofula, for gout, and for the colliquative sweating due to exhaustive diseases, asclepias should have a fair trial. The same may be said of it in certain forms of dropsy, and in some skin diseases when the skin is dry and scaly. By way of emphasis we will repeat that asclepias is an Eclectic standby in pneumonia, pleurisy, bronchitis, cough, etc. Cases must be selected properly and relief follows surely." (Bloyer.)

Asclepias tuberosa is diaphoretic, diuretic, tonic, laxative, carminative and antispasmodic. In very large doses it is emetic.

Indications.—Sharp cutting or darting pain, increased by deep breathing; pain acute, and seemingly dependent on motion; lack of secretion from the skin; snuffles, or acute nasal catarrh of infants; flatulent colic in young children.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 60 drops.

Usual Prescription.—℞ Asclepias, gtt. x to ℥ii; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Asparagus Officinalis—Asparagus.

This remedy possesses diuretic properties of a considerable value, and has been employed with advantage in various forms of dropsy. It has also given marked relief in some cases of enlargement of the heart.

Asparagus officinalis is a gentle but certain diuretic.

Indications.—Undue excitement of the circulatory system; dropsical condtions.

Dose.—Fluid extract, 20 to 60 drops.

Usual Dose.—20 to 30 drops.

Aspidium Filix-Mas—Male Fern.

Male fern is a specific for tapeworm. It is supposed to cause the removal of the parasite through its power as a gastro-intestinal irritant.

Indications.—Symptoms of tapeworm.

Aspidium filix-mas is anthelmintic, tonic and astringent

Dose.—Fluid extract, ½ to 2 drachms; oleoresin, 6 to 8 grains.

Usual Dose.—One-half to one drachm of the fluid extract at night and again in the morning before breakfast. Two hours after the administration of the last dose a saline or vegetable cathartic should be given. It is claimed by eminent writers that oils should not be given after this agent, as they facilitate the absorption of its toxic principle.

Aspidosperma Quebracho—Quebracho.

Quebracho is recommended by many physicians as a remedy for dyspnea. It relieves the cyanosis and sense of suffocation due to embarrassed respiration, as in emphysema, capillary bronchitis, phthisis and chronic pneumonic processes. Its action is almost immediate, and one or two doses of thirty drops each have often afforded marked relief. Large doses sometimes cause nausea and slight salivation. Aspidospermine represents fairly well the activity of the drug, and is preferred by some physicians.

Aspidosperma quebracho is sedative, expectorant, astringent and antispasmodic.

Indications.—Asthmatic attacks and cyanosis in phthisis;

short and labored respiration; cough and difficult respiration in phthisis; attacks of dyspnea due to dropsical accumulation in the abdominal cavity; difficult respiration in bronchial catarrh and emphysema; cough and dyspnea increased by exertion; paroxysms of dyspnea with wheezing sounds; dyspnea accompanying heart diseases; spasmodic asthma; diarrhea of consumptives.

Dose.—Fluid extract, 15 to 60 drops; solid extract, 1 to 3 grains; aspidospermine (consisting of the alkaloids of the bark), 1-500 of a grain to ½ of a grain, triturated with sugar of milk.

Atropæ Sulphas—Sulphate of Atropine.

The properties of this drug are substantially the same as those of belladonna, but it is much more speedy in its action. It may be employed internally and subcutaneously. For the latter use the dose is from the 1-300 to the 1-128 of a grain.

In ophthalmic practice atropine is extensively employed. It is used in iritis to prevent adhesions, and is employed to dilate the pupil so that the interior of the eye may be examined. Morbid adhesions may be broken up by its use. For these purposes it must be applied directly to the eye in a solution of from two to four grains in one ounce of distilled water. This solution in doses of from two to five drops is a very good form in which to administer the drug for its systemic effects.

Atropine is incompatible with caustic alkalies, tannin and vegetable infusions containing tannin, an insoluble tannate of the alkaloid being formed.

Dr. Edward T. Reichert, from a long series of experiments, concludes that atropine may be of value as an antidote in morphine poisoning, but only before the third stage, and then only when given in small or moderate doses. Even here its usefulness is practically limited to a possible excitation of the respiratory movements and a stimulation of circulation, both of which, however, may be fully compensated for in its pernicious effects, chiefly upon general metabolism. Given in large doses during the second stage, or in moderate to large doses during the third stage, it almost without exception does harm by intensifying the morphine condition, prolonging or shortening, but intensifying the second stage, or shortening the third stage and hastening the fatal issue. If the second stage is shortened, it is owing to the earlier

development of the third stage of the poisoning. A dose of morphine that is not lethal may be made so by the synergistic action of a sub-lethal dose of atropine.

In using atropine great caution should be exercised. In human beings, if taken in large amounts, it is a powerful narcotic poison.

Indications.—Night sweats of phthisis; convulsions; whooping-cough; epilepsy; chorea; neuralgia; rheumatic pains; hemorrhage.

Dose.—1-100 to 1-60 of a grain.

Usual Dose.—1-100 of a grain, in pill, powder or solution.

Auri et Sodii Chloridum—Chloride of Gold and Sodium.

Whenever the therapeutic effects of gold are needed this preparation will constitute an excellent form in which to administer the agent. A patient suffering from secondary syphilis, glandular disease or chronic disease of the skin, the tongue being moderately red and the circulation to the surface good, will often derive benefit from minute doses of the chloride of gold and sodium (one-sixtieth to the one-twelfth of a grain). It may be combined with a small portion of phytolacca.

The chloride of gold and sodium is a powerful organic stimulant and alterative.

Indications.—Secondary and tertiary syphilis; locomotor ataxia; epilepsy; scrofulous conditions; hypochondria and mental depression; amenorrhea from torpor; disturbances of digestion and assimilation; sexual impotence.

Dose.—1-12 grain several times a day in aqueous solution or pill. Not more than three grains a day should be used. The solution should be kept in colored glass bottles.

Avena Sativa—Oat.

Avena exerts an influence which increases nerve force and improves nutrition of the entire organism.

In paralysis and wasting diseases of the aged it is a useful medicament, and in chorea and paralysis it has been employed with beneficial results. In neurasthenia and nervous prostration it is an efficient remedial agent. The occipital headache which is often associated with general neurasthenia is promptly relieved by this drug, and in local paralysis of diphtheria it is an agent of

decided merit. In the convalescence of protracted disease, and during the asthenic stages of inflammatory and exanthematous diseases, avena has been used with markedly beneficial results.

Avena has a selective influence upon the genito-urinary organs, and it, therefore, often renders excellent service in wrongs of these organs. In impotency, especially in men under middle age, it is an agent of considerable value. In uterine and ovarian wrongs, with hysterical manifestations, it constitutes a medicament of more than ordinary merit, and in the nervous headaches which are often associated with menstruation it is a superior remedy. Avena is especially indicated in headaches accompanied by a burning sensation on the top of the head, and in sick headaches associated with nervous weakness its effects are promptly curative.

"Avena sativa is pre-eminently an anti-neurotic, quieting the nervous system to a remarkable degree. Its special sphere of action seems to be upon the male sexual organs, regulating the functional irregularities of these parts perhaps as much as any drug can. It is a most useful remedy in all cases of nervous exhaustion, general debility, nervous palpitation of the heart, insomnia, inability to keep the mind fixed upon any one subject, etc., more especially when any or all these troubles is apparently due to nocturnal emissions, masturbation, over sexual intercourse, and the like. For these disorders it is truly specific. It is one of the most valuable means for overcoming the bad effects of the morphine habit. In most cases in which the habitué has not used more than four grains daily, the opiate may be abruptly discontinued, and even substituted, without any serious results. If a larger quantity than this amount has been taken for some time, it is better to gradually reduce the daily dose of morphine, in the usual manner, simply prescribing the avena in addition. The latter should be given in the same dose, as a rule, regardless of the amount of morphine taken. In other words, it is not necessary to increase the avena as the opiate is withdrawn. When the quantity of morphine has not exceeded four grains daily, it should be stopped at once, as above stated, and avena given in its stead, in fifteen drop doses, four times a day, in a wine-glassful of hot water. By this method the disagreeable after-effects will be much less than if the dose of morphine is gradually reduced, and the patient will find life quite bearable, as a rule, at the end of a week.

"Avena sativa should always be given in appreciable doses of the tincture. Fifteen drops three or four times a day, well diluted, will usually meet the case. It may be given in doses of from five to sixty drops, in rare instances." (H. E. Russell.)

"The prominent uses of avena sativa are as a nerve tonic, a stimulant and as an antispasmodic. The specific indications calling for its use are exhaustion or nervous prostration—neurasthenia, if you prefer it. It acts as a gentle stimulant and tonic, as a restorative to the depressed nervous system and vital energies.

"As a remedy, with such symptoms presenting, we prescribe avena sativa in the debility and insomnia that we find in debauchees who are reforming. A number of times we have given it to the 'sworn off' toper, and with good results. For the approaching delirium tremens we administer full doses of specific nux vomica and capsicum. When the immediate danger of the 'snakes' has passed, full doses of avena are given alone or in combination with other remedies. We have used it freely and frequently in those trying to relinquish the morphine and opium habits. Recently our experience with it, administered in full doses to a clinical patient of this kind at the Eclectic Medical Institute, was quite satisfactory. Occasionally we give it alone; frequently we combine it with other so-called nervines.

"Avena sativa is as frequently a remedy for the insomnia of nervousness—the overworked. It is harmless and efficient, and far better than opiates in these conditions. It is also a remedy in spermatorrhea when due to nervous exhaustion. It is a reliable remedy, prompt in action in many cases of nocturnal seminal emissions, in cases of nervous type. Avena is also an efficient remedy in the recuperating stage following typhoid and other exhausting or debilitating diseases. It has been highly recommended in certain forms of paralysis, and in cardiac rheumatism. The name of the disease is not so material as the conditions presenting. Nervous debility due to or accompanying any disease may be overcome by the judicious use of avena sativa.

"Quite frequently we advise that avena be taken in hot water. We cannot say positively that this adds to the virtue of the medicine as much as it makes an impression on the patient. The hot water alone is likely to help materially in 'waking up' a feeble stomach and nervous system.

"As we have said above, we many times combine avena with other remedies. It is often a part of a prescription containing one or more substances, such as specific nux vomica, lupulin, staphysagria, gelsemium, saw palmetto, etc. We believe, upon the whole, that avena sativa is a remedy that deserves further study and consideration at the hands of the profession." (Bloyer.)

Avena sativa is a nerve stimulant of great power, diuretic, laxative, tonic, antispasmodic and resolvent.

Indications.—Paralytic tendencies; pain in head, extending along spine and down the lower extremities; lack of control over

the urinary organs; alcoholism; spermatorrhea; nervous prostration due to mental strain; opium and morphine habit; sleeplessness, with irritability; pain in occipital region extending into the neck and downward along the spine; vagary of thought and manner; neurasthenia; melancholia; hysteria; impotence from sexual abuses.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Avena, ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Baptisia Tinctoria—Wild Indigo.

Baptisia has long been extensively and successfully employed in typhoid fever and in all low states of the system in which there was a tendency to a typhoid or septic condition. When specifically indicated and administered in small or medium doses it is one of our most reliable remedial agents. Strictly speaking, it is not a chemical antiseptic, but in the living human being it has the power to arrest the progress of certain destructive diseases, and greatly favors the restoration of healthy conditions. For this reason some writers have termed it a vital antiseptic. Baptisia is a powerful vital stimulant, preservative and restorative in all states in which there is great loss of vital power. It improves the circulation in weak conditions and apparently dying parts, and at the same time exerts a decidedly beneficial influence upon the tissues involved. The cellular, muscular and nerve tissue, and the blood, are all restored to functional activity by its invigorating influence.

Indications for baptisia are frequently seen in continued, intermittent and remittent fevers, scarlet fever, dysentery, diarrhea, and in many other abnormal conditions.

"It is in those cases in which there is enfeebled capillary circulation and tendency to ulceration that it is *specific*. That is, the condition is one of atony, with tendency to molecular death and decomposition. The remedy is, therefore, stimulant and antiseptic.

"It may be employed with the greatest certainty in any form of sore mouth or throat presenting the characteristics named. Especially in stomatitis ulcerata, or cancrum oris, in cynanche maligna, and in the sore throat of scarlatina maligna; but it is not only a good local application in these cases, but a most valuable internal remedy.

"It is *specific* to the condition upon which such sore mouth and throat is based, whether it is manifested in this way, or in ulceration of Peyer's follicles in typhoid fever. Thus I have employed it with very marked advantage in all cases showing putrescency and tendency to softening and breaking down of tissue.

"It is not a remedy for acute inflammation, whether erythematous or deep-seated, and in ordinary stomatitis or cynanche it is not a remedy. In diphtheria presenting acute inflammatory symptoms it is worse than useless. But in diphtheria with swollen and enfeebled mucous membranes, dusky or livid discoloration, or blanched appearance, with tendency to ulceration and sloughing, there is no remedy more certain.

"I have successfully employed the baptisia in *typhoid* dysentery, as have others. But, as will be seen, this is but the condition named above for its specific action. So long as there is an acute inflammation, with stools of blood or pure mucus, it is not beneficial, but when the discharges resemble 'prune juice, the washings of meat, or are muco-purulent,' with general symptoms of an analogous character, then it becomes one of our most certain remedies." (Scudder.)

"Baptisia tinctoria has held a prominent place for many years in the Eclectic materia medica as an antiseptic, but of more recent date it has shared the honors with echinacea. Both, however, have their particular uses, and the one should not be discarded for the other, a practice too common in these days when a new drug almost daily displaces another. Both baptisia and echinacea are good general antiseptics, yet each has its specific indications pointing to different specific action and needs.

"Sepsis, then, is the keynote to the selection of baptisia, but this indication is governed by the peculiar appearance of the part affected, of the membranes, and of the patient as a whole. There is a peculiar duskiness of a bluish or purplish hue that points unmistakably to baptisia. It may be a swollen, bluish face, dark, swollen membranes, or an ulceration of indolent character, with bluish or purplish edges. When the tissues are full, with a sluggish capillary circulation and tendency to death and disintegration of the parts, baptisia is the indicated remedy. Active, acute conditions are not benefited, and are likely to be aggravated by baptisia. It is contraindicated by hyperemia; indicated by capillary stagnation. This is well illustrated in some cases of diphtheria. The sluggish cases are those benefited by it. Baptisia is pre-eminently a typhoid remedy. Perhaps no remedy has been so popular among Eclectic physicians for its effects in this condition. Here, as elsewhere, the symptoms indicating baptisia are those of debility and tendency to destruction of the blood and the tissues. The baptisia patient has a swollen appearance, dusky

color, a strong tendency to drowsiness, and the diarrhea is of the prune-juice variety, resembling, as Dr. Scudder wrote, the 'washings from raw meat.' Keeping these facts in view, baptisia may be confidently used in any disease, and particularly in septic conditions, in sore mouth and malignant forms of sore throat, in scarlatina, tonsillitis, typhoid fever, dysentery, pneumonia, typo-malarial fever, fetid sanious discharges from the genitalia, and in similar discharges from other parts. Briefly recounted, the indications are: Debility, with feeble capillary circulation; fullness of tissue, with dusky, leaden-hued, purplish or livid discoloration; tendency to ulceration and decay; color of skin disappears upon pressure; typhoid states; face swollen and bluish, like one having been frozen or long exposed to the cold; fetid, prune-juice-like discharges; tendency to gangrene." (Felter.)

"As a remedy baptisia has been variously classified as an alterative, a stimulant, an astringent, a purgative, an emetic, and as an antiseptic. Within our experence it has been all of these and *much more.* In overdoses it is an emeto-cathartic and should not be so used. In medicinal doses its most praiseworthy action is as an antiseptic, and through this property, when indicated as a remedy, almost any other end may be attained. As an antiseptic it will act as an antipyretic, as an astringent, as a stimulant, and as an alterative; as a laxative and as a diuretic.

"It is a dynamic antizymotic, and, like echinacea, its effects are not in any respect of a chemical nature. That it does produce, under certain conditions, most marked effects, cannot be controverted. And it is just as true that when these conditions or indications are not present it has absolutely *no effect* upon the diseased conditions. The point we desire to emphasize is this: In one case of diphtheria, for instance, baptisia is a most excellent remedy, and no other medicine known will encompass half the good that baptisia will, while in the next case of diphtheria, when given in the same-sized doses and with the same regularity, but without the presence of the indications, its effects are entirely *nil.* We believe that this latter applies as well to the healthy body when medicinal doses are taken.

"Baptisia is the indicated remedy when there is a fullness of tissues, with a dusky, purplish-red discoloration of the tongue, mucous membrane, or general tissues of the body—an appearance resembling an exposure to severe cold. This color varies with the severity or malignancy of the disease to a deeper color, even to a red-violet, brown or black, and can be observed in the fauces and pharynx, as well as upon the part or organ affected, when it is within view; the breath is peculiarly fetid or foul; there is an unpleasant moistness or pasty nastiness about the mouth, with a tendency to sordes on the teeth, gums and lips; there is a fullness of tissues and an expressionless face that show an enfeebled

circulation; the pulse is full and oppressed; there is an unpleasant pungent heat of the surface when the open hand is placed upon it; the urine is frothy and bad-looking and of a bad odor; the stools are fetid and foul; everything about the patient is disagreeable, and every thing points to one word—*sepsis*. There is a tendency to ulceration, to decomposition and to molecular death.

"Baptisia is often a remedy in typhus and especially in typhoid fever. In the cases calling for it there is marked atony and depression, 'prune-juice' or 'meat-washings' discharge, a tendency to ulceration of the bowels, together with the baptisia indications above set forth. The same may be said of its use in severe cases of so-called typho-malarial fever. In this, besides the malarial impression, we have the well-known *typhoid* symptoms quite prominent. In diphtheria—bad cases, with a livid, blanched, purplish surface and expressionless face, the throat ulceration tending toward sloughing, and baptisia expressions predominating—baptisia is a most excellent and active remedy.

"In dysentery, after the bloody stool and tenesmus stage has passed, and atony and typhoid prevail, and prune-juice, purulent, disagreeable discharges are the order, and the symptoms above enumerated are dominant, there is sepsis—baptisia is *the* remedy. In scarlet fever with *bad blood, bad throat* and *bad everything,* try baptisia. The same may be said of cynanche maligna, of stomatitis and of aphthous sore mouth.

"Many times 'typhoid' symptoms prevail in cases of mania, melancholia, dementia, stupor, etc.; when they do, and *sepsis* threatens, use baptisia with confidence. Use it in *any disease* in which it is specifically indicated. Generally, it is not called for in the acute stage, or in the stage of active inflammation, but later, when there is a waning of life's forces. The earlier you can see your baptisia indications and give it the better. Many times you will see them from the beginning. But do not give baptisia because at times it is a good remedy, when at this particular time a much better remedy might be given.

"Baptisia has been highly recommended as a local application, in the shape of a decoction or wash, or when incorporated in an ointment base, in putrid and gangrenous ulcers, when there is a tendency to sloughing, etc., and baptisia indications prevail. As a gargle or wash it is to be applied to mouth and throat affections; it may be used as a wash for ulceration of the uterus, or for foul leucorrhea." (Bloyer.)

Baptisia tinctoria is antiseptic, tonic, stimulant, alterative and emmenagogue. In very large doses it is cathartic and emetic.

Indications.—Dusky coloration of the tongue and mucous membranes; full and purplish face, like one who has been long

exposed to severe cold; in typhoid conditions with a continued moist, pasty coating on a tongue of natural redness; slick tongue, looking much like raw beef; stools looking like "prune juice or meat washings"; dark, tar-like, fetid discharges, mixed with decomposed blood; livid or blanched mucous membranes; putrid secretions.

Dose.—Fluid extract, ¼ to 30 drops; specific medicine, ¼ to 10 drops.

Usual Prescription.—℞ Baptisia, gtt. x to xx; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Barii Chloridum—Chloride of Barium.

The chloride of barium is a very efficient remedy in all cases in which there is an irregular circulation and an abnormal distribution of blood. In the vasomotor paralysis which sometimes occurs in infectious diseases it is a useful agent. Its action promptly reduces the heart's action and causes a greater quantity of blood to be circulated. The chloride of barium acts as a tonic, stimulates the reflexes, and assists the heart in bearing its burden. It increases the blood-pressure and at the same time reduces the frequency of the pulse. Its effects are apparent in from two to three hours' time, showing that the salt is rapidly absorbed.

Indications for the chloride of barium are frequently seen in pneumonia, typhoid fever, and other abnormal conditions.

The barium salts are powerful poisons, and great caution should be exercised in their employment.

Indications.—Scrofulous indurations of the cervical glands and tonsils; hypertrophy of connective tissue of glands; locomotor ataxia; sensitiveness to cold; scanty menstruation; weakened cardiac action; dirty, inelastic skin; enlarged lymphatics; feeble respiration.

Dose.—1-10 to ½ of a grain. It may be administered in the 1-100 of a grain of the 3x trituration, or a teaspoonful of a 5 per cent. solution may be given every two to four hours.

Barosma Crenata—Buchu.

Buchu is a valuable remedy in subacute and chronic diseases of the genito-urinary tract, but it is not adapted to cases in which there is active inflammation. It has a specific soothing and stimulating influence upon the mucous membranes of the urinary or-

gans, and is especially indicated in any case of lowered systemic tone in which there is an acid urine heavily loaded with mucus or muco-pus. In cases in which there is a constant desire to micturate, and the act gives little or no relief, its action is markedly corrective, and in retention or incontinence of urine, due to an impaired condition of the parts involved, buchu is a very efficient remedy. It also constitutes an excellent medicament in gastric debility, especially when complicated by wrongs of the urinary organs. In chronic catarrh of the bladder, it is a desirable remedial agent, and in subacute or chronic cystitis it exerts a corrective influence. In pyelitis, hematuria and gravel it may well constitute a part of the treatment. In simple and gonorrheal urethritis it is employed with advantage, and in gleet and some prostatic affections it is regarded as a remedy of considerable value. It is also of some value in chronic rheumatism which is complicated by wrongs of the urinary apparatus.

Buchu does not materially increase the flow of urine, but its tonic effect generally, and especially its influence upon the mucous membrane of the kidneys, makes it a medicament of some value in dropsy.

"Buchu is useful in diseases of the genito-urinary organs with excessive irritation and undue and altered secretions from the urethral glands. In catarrh of the bladder, especially such as results from gonorrhea, or irritant injections used in its treatment, this remedy is very valuable. It may be used with good results in atonic dyspepsia. The infusion is a good remedy in dysmenorrhea, amenorrhea and leucorrhea." (Locke.)

"Catarrh of the bladder is another affection in which I have used buchu with a very gratifying degree of success. Its peculiar alterative properties are here manifested. It allays the irritation of the mucous surfaces, lessens the amount of mucus voided, and apparently cleanses and heals the abrasions of the mucous surfaces.

"In enlargement of the prostate gland and thickening of the urethral canal its value as a resolvent can scarcely be estimated. A persevering use of the remedy is requisite in these cases. Among the serious affections to which the urinary apparatus is liable, and in the treatment of which I have employed the preparations of the buchu with remarkable success, I may mention hematuria. The specific tonic property of the remedy is here manifested, and in fact I know of no better tonic remedy for the kidneys under any circumstances.

"In rheumatic affections, so frequently dependent upon a uric acid diathesis, I have long employed this remedy with the most satisfactory results. Even in acute rheumatism, after the inflammatory symptoms are measurably subdued, I seldom omit its exhibition.

"I have cured many cases of *lumbago* with this remedy, in connection with alterative doses of podophyllin.

"In dropsy it is mainly useful in the asthenic forms, particularly when the kidneys, from want of tone, are tardy in the elimination of the absorbed fluid, or are loaded with uric acid deposits." (Grover Coe.)

Barosma crenata is diuretic, diaphoretic, alterative, tonic, stimulant and antispasmodic.

Indications.—A constant desire to urinate, with but little relief from micturition; catarrhal conditions of mucous membranes of the genito-urinary organs; uric acid diathesis; chronic affections attended with excessive secretions; gravelly conditions characterized by the deposit of a pinkish-colored sediment in the urine.

Dose.—Fluid extract, 10 to 60 drops; specific medicine, 15 to 30 drops.

Usual Dose.—10 to 15 drops in water every two or three hours.

Belladonna—Deadly Nightshade.

Belladonna is a powerful stimulant to the vasomotor centers and also to the capillary circulation. It constitutes an energetic medicament in all forms of congestion. In the treatment of diseases peculiar to children a place for this remedial agent is found almost daily. I have never seen a case of scarlet fever which did not call for belladonna as a part of a rational treatment. It favors the development of the eruption, lessens the effect of the poison on the nervous system, improves the condition of the kidneys, and aids in the expulsion of the poisonous matter from the blood. In small doses this drug acts as a prophylactic against scarlet fever. This fact I have demonstrated on numerous occasions. Its prophylactic indications may be obtained by administering the remedy in small doses every two or three hours. In this way the disease has usually been confined to the first cases, but when not so limited the exceptional cases have always been of a very mild form.

The varied therapeutic powers of belladonna are equaled by

but few other drugs. It is an excellent remedial agent in erysipelas when the skin is deep red, and also when accompanied by a burning sensation, and the surface is free from vesicles. In spasmodic dysmenorrhea and in spasmodic constriction of the bowels it acts in a curative direction, and in spasmodic cough and asthma it is employed with gratifying results. In the latter stages of whooping-cough it is also a favorite remedy. It lessens the severity of the paroxysms and lengthens the intervals between the attacks of coughing. Infantile convulsions of an epileptiform character also come within the curative range of belladonna, and in the treatment of chorea much benefit has been derived from its exhibition. In spasmodic conditions which come on suddenly, with intervals of profound sleep and deathly pallor and cool perspiration, and preceded in the early stages by extreme drowsiness and flashes of fever, belladonna is the urgently needed remedy. In fact, it is a curative agent in nearly all functional diseases characterized by sudden exacerbations, with intervals of rest and stupor and flashes of fever, alternated with more or less perspiration, dry tongue and fauces, with rapid respiration.

In nearly all febrile diseases indications for belladonna are frequently seen. It is a stimulant to the urinary tract, and in small doses relieves irritation. Its tendency is to increase the quantity of urine secreted. In incontinence of urine in young children, when the trouble results from poor pelvic circulation or from chronic irritability of the bladder, this drug can be employed with the utmost confidence that it will aid much in removing the abnormal condition. In the annoying condition resulting from an excessive secretion of the salivary glands belladonna often gives prompt relief. It is also successfully employed in various forms of neuralgia.

Locally applied, belladonna relieves pain in abscesses, and when applied early often prevents suppuration. Largely diluted and applied hot it is of much value in orchitis, neuralgia and lumbago.

"The *specific* use of belladonna is as a stimulant to the capillary circulation, especially of the nerve centers—a remedy opposed to congestion. My attention was first drawn to it by an article from Brown-Séquard, giving the results of his experiments with the drug, stating that with the microscope he had seen marked contraction of the capillaries following its use. It at once suggested itself to me that if it would cause capillary con-

traction it would be *the* remedy for congestion; and I at once commenced experimenting with it in this direction.

"I well recall my first marked case, a boy about eight years old suffering from malignant rubeola. The entire surface was swollen and dusky; the eyes dull; the pupils dilated; the face expressionless; breathing labored, and wholly unconscious for forty-eight hours. The administration of belladonna alone (in small doses) was sufficient to restore consciousness and a free circulation, with good appearance of the eruption, in twenty hours.

"The evidences in its favor rapidly accumulated, so that in eighteen months I used it with a feeling of almost certainty for this purpose.

"Whilst it exerts the same influence on all persons and at all ages, the true pathological condition being determined, it is especially valuable in treating diseases of children. In the young the immature nervous centers suffer more severely, and we find the opposite conditions, of irritation with determination of blood, and atony with congestion.

"The symptoms calling for the use of belladonna are usually very plain: The patient is dull and stupid, and the child drowsy, and sleeps with its eyes partly open; the countenance expressionless; the eyes are dull, and the pupils dilated or immobile; whilst as it continues respiration becomes affected and the blood imperfectly aërated.

"In these cases I prescribe belladonna; in the adult, in the proportion of gtt. v to x, to water ℥iv; in the child, gtt. v to ℥iv; in each a teaspoonful every hour. As these are mostly febrile cases, or at least have a feeble, frequent circulation as an element, I give aconite in the usual doses.

"Belladonna is also a *specific* in incontinence of urnie. Not that it will cure every case, but those in which an enfeeblement of the pelvic circulation is the principal cause. Probably a lesion of the spinal cord has also much to do with it. Of course, it gives no relief where the incontinence arises from vesical irritation. The dose in this case will be the same as above named, but only repeated four times a day.

"Belladonna is also a *specific in diabetes insipidus;* even a belladonna plaster across the loins being sufficient in many cases for its arrest.

"Belladonna is undoubtedly a *prophylactic* against scarlatina, as I have thoroughly proven in my practice. Recollect, however, that it is only prophylactic in small doses; in doses sufficient to produce dilatation of the pupil it has no such influence.

"Belladonna has other special uses, but they may be briefly summed up: If in any case there is an enfeebled circulation, with stasis of blood, belladonna is the remedy. Of course, acting on some parts more directly than others, its influence will be more

decided, but there is no case, with conditions as above, in which it will not be beneficial.

"I may say, in conclusion, that we want a *good* preparation of the recent herb; and then it *must* be used in small doses to obtain the influences named." (Scudder.)

"The direct specific indication for belladonna is impairment of the capillary circulation with congestion. With this condition always before us, not much difficulty will be experienced to find its exact place in therapeutics. In acute disorders, where there is inclination to dullness or stupor, or where these conditions really exist, pupils dilated, face pallid and expressionless, cerebral congestion, sluggish capillary circulation, extremities cool—all these call for belladonna, *but in small doses*. It stimulates capillary circulation by its decided influence upon the vaso-motor centers and nerve peripheries; is a direct and powerful stimulant to the sympathetic and the heart, exercising a powerful influence in enfeebled heart's action and depression of the sympathetic influence.

"Whether child or adult, if during the course of disease our patient shows a decided disposition to sleep, there is dullness of intellect, dilated pupils, oppressed pulse, eyes partially open, all indicative of cerebral congestion, belladonna is indicated. There is a condition of chilliness, skin pallid, pulse full but oppressed, dull, sleepy headache, indicating capillary stasis, which belladonna overcomes. Those dull, heavy headaches, where pain is constant and where there is a feeling that if it were not for the pain, the patient could sleep, the remedy promptly relieves.

"In cerebral or spinal congestion, acute or chronic, where there is a dull, heavy aching and fullness in the head, drowsiness, eyes dull, pupils dilated, or a condition of apparently threatening apoplexy, belladonna is a positive remedy. Sore throat, where the mucous membranes have a dark-red, dusky color, capillary engorgement plainly evidenced; at the onset of or threatened inflammatory conditions, pneumonitis for instance, to relieve the capillary engorgement and prevent local effects, the remedy is indicated. Persistent inclination to sleep, accompanied by vomiting, is relieved by it. So is whooping-cough, where there is also the characteristic dullness, hebetude, and impairment of capillary circulation.

"In the exanthemata, especially the congestive forms, scarlatina in particular, eruptions are tardy, the skin appears congested and patient is drowsy, the remedy proves of true value. In meningeal inflammations, especially in the subacute forms, temperature several degrees above normal, skin cold and moist, eyes dull, pupils dilated, head drawn back, and is being rolled from side to side, eyes partly open during sleep, the remedy is directly indicated. Post-scarlatinal nephritis is a frequent con-

dition relieved by belladonna; so are other cases of renal capillary engorgements.

"I believe belladonna to be particularly a child's remedy, and know that the dose must be small, if beneficial results are to be obtained. Active delirium during fevers, where there is cerebral congestion and surface circulation is markedly sluggish, dusky appearance of skin, will be subdued if the remedy is given in grain doses of the 3x. Deep aching of loins or back, with a sense of heavy fullness, will be relieved by one-third drop doses; so with the aching and chilliness often present during a 'cold' or preceding fever or grippe. In constipation, when the sphincter ani is abnormally contracted and there is local capillary congestion and lack of secretion, belladonna is indicated.

"In 'run-down' individuals, where there is indisposition to exertion, extremities are cold, nervous debility, when it is desirable to stimulate, this agent alone, or combined with any other indicated remedy, will produce salutary effects." (Niederkorn.)

"Except in degree and rapidity the toxic effects of belladonna and its chief alkaloids are practically identical. Small doses occasion dryness and constriction of the throat, with possibly disordered vision and such unpleasant head symptoms as vertigo and confusion of ideas. Moderate doses provoke a greater degree of dryness of mouth and throat, on account of which there ensues marked difficulty in swallowing. The pulse is slowed, the pupils dilated, accommodation defective, and vision confused. The skin is dry and a considerable rise of temperature may take place. When, however, a dose large enough to produce vaso-motor paresis is taken, the temperature falls. Large and toxic doses greatly augment the dryness and dysphagia and giddiness, the patient reels or staggers when he walks, there is great thirst, and sometimes drowsiness and nausea and vomiting occur. The saliva now becomes suppressed, breathing is rapid, and dilation of the pupil extreme. Vision is either lost, or indistinct and double. The rate of the pulse may be doubled and the volume is full and hard. A marked scarlet efflorescence, resembling that of scarlatina, but lacking the punctations and subsequent desquamation of the latter, now overspreads the countenance and progresses upon the neck and body. The eyes are brilliant and staring, and the conjunctivæ may be congested. A peculiar active delirium accompanies and is of an illusional and loquacious character. The victim, though oblivious of his surroundings, sees visions, entertains spectres, has fancies and hallucinations, and other phantasmagoria, and gives way to laughter and gayety; again, the cerebral disturbance may be of a wild maniacal type, with furious delirium and fighting propensities. Loss of speech often occurs early, though repeated movements of the tongue and lips indicate the efforts to articulate. Purging, vomiting and unsuc-

cessful attempts to micturate are frequent, though not constant, symptoms of belladonna poisoning. Finally, with (rarely) or without convulsions, occurs a complete abolition of function, stupor sets in, the pulse becomes rapid and weak, the limbs cold, and paralysis closes the scene in death, which results chiefly from respiratory paralysis.

"Should recovery take place, the patient seldom recollects any of the circumstances of his illness.

"Extreme dryness of throat and mouth, scarlet efflorescence without puncta, widely dilated pupils, staring eyes, suppression of urine, and talkative or wild delirium should lead one to suspect belladonna poisoning. In medication, the first three symptoms should be a warning to cease the administration of belladonna or its alkaloids.

"When atropine is the poisonous agent the effects are much quicker than with belladonna, and abolition of muscular power may occur without either delirium or convulsions having occurred. A few belladonna berries have caused death, as has an enema containing 1-6 grain of atropine. By mouth 1-12 grain of atropine and hypodermically 1-30 grain have likewise proved fatal. Again, recovery has followed the injection of much larger doses. Death has occurred in five minutes after the injection of atropine. It seldom takes place in less than two hours, and usually does not occur under fifteen to eighteen hours. Symptoms of poisoning are often delayed from one hour to five hours after taking the drug.

"Treatment of belladonna poisoning should be prompt. Emetics, stomach pump, lavage tube, and tickling the throat to produce emesis should be resorted to at once. As belladonna tends to wholly suppress the urine, catheterization should be resorted to early and frequent, to eliminate the poison and to prevent its reabsorption. As emetics, zinc sulphate, 20 grains, powdered ipecac, 10 grains, or mustard and salt (equal parts), two teaspoonfuls may be given in warm water, followed by copious draughts of lukewarm water, to facilitate emesis. Unless contraindicated by marked depression, ⅛ grain of apomorphine may be given. Purgatives, such as castor oil, are useful to free the intestinal tract of the poison. Sweet spirit of nitre facilitates its removal by way of the urinary organs.

"As partial chemical antidotes, animal charcoal, tannic acid, and solution of iodine may serve a useful purpose.

"While by no means a settled fact that morphine and belladonna are in all respects antagonistic, it is still recognized that morphine judiciously employed is the best antidote to belladonna and atropine poisoning. The best rule to follow is to be guided by the pupillary response. Therefore small and repeated doses administered until the pupils contract and are maintained in contraction is the best method to pursue. From the fact that jabor-

andi and its alkaloid pilocarpine, and calabar bean and its alkaloid physostigmine are in some measure antagonistic to belladonna, they have been recommended and employed as physiological antidotes in poisoning by atropine and belladonna." (Felter.)

Belladonna is a spinal, cardiac and respiratory stimulant, diuretic, anodyne, mydriatic, irritant narcotic poison, or a paralysant of the motor nerves, according to the quantity of the drug administered. In doses large enough to dilate the pupils it exerts an influence opposite to that obtained from the doses named in the prescription herein given, and, of course, does not meet the following specific indications, as they are based upon the small dose.

Indications.—Dusky redness of the surface from capillary congestion; patient dull and inclined to sleep; eyes dull and pupils dilated; deep aching of the loins and back, with a sense of fullness; dull, heavy headache; sleeping with the eyes but partially closed; night sweats of consumptives; diseases of the brain when there is a sense of fullness, dizziness, drowsiness and dull, heavy aching; incontinence of urine.

Dose.—Fluid extract, ¼ to ½ drop; specific medicine, 1-20 to ½ drop.

Usual Prescription.—℞ Belladonna, gtt. v to x; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Benzoinum—Benzoin.

Benzoin has been employed in chronic pulmonary wrongs which especially affect the bronchial mucous membrane with satisfactory results. Its acridity and excitant properties render it objectionable in inflammatory states of the system. Its heating and stimulating qualities affect the mucous surfaces generally, but the air passages are the parts more especially influenced by this agent.

Benzoin is sometimes used as an excitant inhalation in asthma, phthisis, chronic catarrh and chronic laryngitis. Eminent writers have strongly recommended it in the latter disease. It may be added to boiling water and its vapor inhaled by the patient.

The tincture is used locally to saturate the dressings of unhealthy wounds and sores, and as an application to chapped hands and cracked nipples. Ten grains of the gum to the ounce of prepared lard constitutes benzoinated lard.

Benzoin is expectorant, stimulant and disinfectant.

Indications.—Diseases affecting the bronchial mucous membrane, especially chronic bronchial catarrh; unhealthy wounds and sores; chapped hands and cracked nipples. By inhalation: Asthma, chronic catarrh and chronic laryngitis.

Dose.—Tincture, 10 to 40 drops; fluid benzoin, 5 to 15 drops.

Usual Dose.—Tincture, 10 to 30 drops, suspended in glycerine.

Berberis Aquifolium—Mountain Grape.

Berberis is one of our most reliable drugs in syphilis, and it is especially valuable in the secondary and tertiary stages. Those who have had large experience in its use believe it to be an unrivaled antisyphilitic. It promptly relieves the muscular, bone and periosteal pains, and syphilitic eruptions of all kinds disappear soon after the employment of this medicament. In syphilis berberis should be given freely and in liberal doses. In glandular indurations and in chronic ulcerations of a syphilitic character it exerts a needed influence, and in chronic tonsillitis, chronic parotitis and trachitis it is employed with very satisfactory results. In incipient phthisis it will aid in the treatment by restoring gastric activity, and in this way modify the tubercular tendency. Even when the disease is somewhat advanced berberis will lessen the rapidity of its course, lessen the frequency of the pulse, allay local irritation and prolong life.

In chronic dyspeptic conditions, due to wrongs of the stomach, intestines, liver and other glands, the tonic property of berberis serves a most excellent purpose. That it acts as a tonic and corrective has many times been demonstrated beyond a peradventure. This fact has often been observed when the agent was being employed in the treatment of diseases of the skin. In diseases in which there is a waxy appearance of the skin, similar to that sometimes seen in the beginning of jaundice, berberis exerts a curative influence, and in diseases of the spleen it is used with good success.

In ozena, when the secretions are thick, gummy and tenacious, it is used with advantage, and in catarrhal diseases of the upper air passages it is beneficially employed. In diseases of the throat, characterized by an excessive discharge and a lowered vitality, berberis has also been used with some advantage, and in diseases

of the nose presenting constitutional symptoms it may well be employed as an adjunct to local treatment.

Berberis is especially valuable in non-inflammatory affections of the skin, and the eruptions which frequently appear on the face at the time of puberty or a little later are well treated with this agent. Its judicious administration will also contribute materially toward the removal of skin roughness and exercise an influence which will make for a clear complexion and a natural soft and moist skin, providing the abnormal condition is not a reflex caused by some uterine, ovarian or menstrual wrong. Berberis is an efficient remedy in scaly skin conditions, and in eczema capitis, eczema genitalis and in scaly eczema of all kinds it is a useful remedial agent. In psoriasis and pityriasis it has merited confidence, and in chronic dermatitis it has been successfully employed after other approved drugs had failed to improve the patient's condition.

Berberis has also been beneficially employed in rheumatism, especially when the pain was like that from a blow, accompanied by lameness and stiffness.

The specific medicine and fluid extract act in perfect harmony with phytolacca, echinacea and the iodides.

"Berberis is a blood maker. It does this by promoting secretion and excretion. It stimulates the glands of the body, and especially the lymphatics and the liver. It is said to have a diuretic action, also. It certainly aids digestion and assimilation. It is believed to be a powerful tonic and alterative, hence it is found in so many of the so-called alterative compounds. It overcomes the depraved condition of the fluids of the body by favoring excretion, secretion and assimilation.

"Recently we have had some pleasant experiences in the use of berberis in several cases of psoriasis that had withstood the onslaughts of other drug dispensers for more than a year. Although it was at times alternated with corydalis, iris, phytolacca and Fowler's solution, we felt disposed to give the credit of starting the cure, if not of completing it, to berberis. It is generally recommended as an excellent alterative in all chronic cutaneous affections, whether syphilitic or not, as ptyriasis, acne, eczema, herpes, etc. It has the same good name in the treatment of chronic scrofulous and erysipelatous affections.

"From its affinity for glandular structures it acts quickly and pleasingly in hepatic torpor, and is said to prove its efficiency as a remedy when given for cirrhosis of the liver. In stomatitis and in dyspepsia, especially when in its incipiency and

when coupled with hepatic affections, berberis is given with confidence.

"In chronic disease of the mucous membranes, as catarrh, leucorrhea, bronchorrhea, etc., it is just as efficient. In chronic pulmonary affections in persons of syphilitic or broken down, depraved constitutions, berberis is a miracle-worker. It rights the wrongs and cleans the Augean stables, sharps the appetite, gives new tone and new blood to the body, and comes as near to curing consumption as any one remedy known to us at this time. It is both a blood maker and a blood cleanser, and, as there is no known remedy so virulent to micro-organisms of nearly all varieties, as healthy blood serum, berberis becomes, indirectly if not directly, a microbicide.

"It is an excellent tonic to the weak and debilitated—to the convalescent. It may be safely added to cascara sagrada for the cure of constipation. As we have faith in medicine, we have faith in the so-called alterative and tonic effects of berberis aquifolium when given in appreciable doses. When effective, we like the small dose; when necessary we give the large one with equal delight."

Berberis aquifolium is tonic, alterative and antisyphilitic.

Indications.—Catarrhal affections of the gastro-intestinal mucous membranes; incipient dyspeptic affections, with loss of appetite; facial eruptions; chronic catarrh; skin eruptions; chronic diseases of the mucous membranes; psoriasis.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 20 drops.

Usual Prescription.—℞ Berberis aquifolium, ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every two, three or four hours.

Berberis Vulgaris—Barberry.

Barberry exercises a direct influence upon the kidneys, bladder and liver, and is used with marked success in abnormal conditions of these organs, especially where there are tearing pains in the renal region, or pains extending down the back and down the ureters into the bladder. In wrongs of the liver, especially when there are sharp pains extending from the liver to the abdomen, it is deemed a remedy of merit.

Barberry also constitutes a very efficient tonic in debilitating and anemic conditions, especially when the tongue is deep red or brownish in color. It promotes natural secretion, favors the flow of gastric juice, and aids the digestive organs in their work of

assimilation. It has also been employed with much success in malarial diseases.

Berberis vulgaris is tonic, laxative, antiperiodic and cholagogue.

Indications.—Relaxed and catarrhal conditions of the gastro-intestinal mucous membranes; atonic dyspepsia; torpid conditions of the liver; cholera infantum; jaundice; chronic diarrhea and dysentery; bilious colic; sharp pains under the ribs; pains extending from the liver to the abdomen.

Dose.—Fluid extract, 5 to 60 drops.

Usual Dose.—5 to 30 drops.

Bismuthi et Ammonii Citratis, Liquor—Liquor Bismuth.

This agent constitutes an excellent medicament in many wrongs of the digestive organs, and is especially indicated in cases which are characterized by irritation. It is one of the prompt remedies for summer diarrhea with irritation of the stomach and bowels. The pointed, elongated, reddened tongue, as well as the eructations of sour, acrid fluids—pyrosis—point to this remedy. The patient has an unpleasant expression around the mouth—the corners being drawn downward, pointing at once to gastric irritability. It is an excellent medicine in children's summer complaints, and is not unpleasant to take.

Liquor bismuth is antacid, tonic, sedative and slightly astringent.

Indications.—Irritative diarrhea; gastro-intestinal irritation; eructation of acid or acrid material; gastric and intestinal pain; heat and uneasiness in the bowels; long, pointed and red tongue; watery diarrrhea; dysenteric diarrhea of typhoid fever.

Dose.—30 to 60 drops.

Bismuthi Subgallas—Subgallate of Bismuth.

The subgallate of bismuth is frequently employed with good success in diarrhea and dysentery, and in weeping eczema, otitis media and herpes it has been used with advantage. It was introduced as a substitute for iodoform, but it is not adapted to all cases, as it is very astringent. It has also been used as a substitute for the subnitrate of bismuth, but it is more astringent and has greater antiseptic power.

The subgallate of bismuth is astringent and antiseptic.

Indications.—Wrongs of the stomach, characterized by acid eructations, sensations of weight and fullness in the stomach after eating, and a very light-colored tongue; gastric and intestinal inflammation, with nausea and vomiting; diarrheal discharges at irregular intervals.

Dose.—3 to 10 grains.

Usual Dose.—5 grains.

Bismuthi Subnitras—Subnitrate of Bismuth.

The subnitrate of bismuth is insoluble in the gastro-intestinal juices. It coats the intestinal mucous membrane, lessening the secretions and absorbing excess of free acids, and at the same time acting as a sedative and feeble astringent. In consequence of its conversion into the sulphide, the tongue and stools are tinged a dark clay color by its use.

This salt of bismuth has a very soothing influence upon mucous surfaces. It is, therefore, useful in all irritative conditions of these surfaces. In irritative vomiting and diarrhea it is a very efficient remedy. It is also of value in gastric pain. In pyrosis it is deemed extremely useful, and in chronic diarrhea and dysentery it is a superior remedial agent. In these diseases it may be combined with magnesia. The diarrhea of typhoid fever and cholera infantum also come within its range of usefulness. In gastric ulcer it should constitute a part of the treatment, and in gastritis caused by the excessive use of alcohol it is often a much needed medicament.

Externally the subnitrate of bismuth is satisfactorily employed in intertrigo, erythema, acne rosacea; as a protective dressing for wounds, ulcers and epithelioma, and as an application for chapped nipples and hands, and in chafings and irritations of the skin. It relieves smarting and itching. It is also serviceable in fissure, prolapsus ani and superficial burns.

Local applications of the subnitrate of bismuth have sometimes given rise to gastro-intestinal irritation, salivation, sore gums and sloughing in the palate, but these symptoms rapidly disappear on removing the dressing.

"The first use of bismuth is to allay irritation of the gastro-intestinal mucous membrane; and for this purpose it has been extensively employed. Usually the subnitrate in impalpable

powder, is employed in small doses frequently repeated for gastric irritation, and in doses of five to ten grains for intestinal irritation, with diarrhea.

"The second may be called its *specific* use, for chronic gastro-intestinal irritation, or dyspepsia with diarrhea. In inveterate cases, not amenable to other treatment, and of years' duration, I have had the happiest results.

"I have omitted to name the common use of bismuth for water-brash, in some cases of which it is very effectual.

"The powdered subnitrate is also a most effectual local application for irritation of the skin—*chafing*—either in the infant or adult. For this purpose the part is thoroughly dusted, and it is repeated as often as necessary to keep it dry." (Scudder.)

"In these days of antisepsis, it is a relief to find an old and tried remedy coming to the front and taking its place with the many new and much vaunted antiseptics. We have found, by experience in a number of cases, that for intestinal antisepsis in typhoid fever, subnitrate of bismuth is the remedy *par excellence*. We usually begin its administration in five or ten grain doses, with the appearance of the diarrhea, and continue it right along throughout the course of the disease. The diarrhea is promptly arrested, and frequently the bowels do not move for ten days or two weeks. Sometimes the patient or the friends of the patient will become restless and uneasy because there is no alvine discharge, and will desire the administration of a cathartic. Their request may be complied with in a few days, if there is, in the meantime, no natural evacuation. When in time the contents of the bowel are discharged, they will be found to be solid or semi-solid, and black from the bismuth, but are odorless, bland and aseptic. We have used subnitrate of bismuth in many cases of typhoid fever, have given it in five or ten grain doses every four hours for weeks, and have not had any trouble with diarrhea, tympanites, intestinal hemorrhage, or auto-infection from intestinal sepsis.

"Subnitrate of bismuth is just a plain, common, everyday remedy, well known to all physicians. It is not a 'specialty' of any drug house or manufacturing firm, hence such have no interest in pushing it. We are sometimes prone to forget our old friends, because they are crowded aside by the extraordinary claims and brazen effrontery of something new and special, which, after all, may not be half as good. Bismuth subnitrate is a useful remedy, and as an antiseptic, both internally and externally, it excels many of the new things. In infantile diarrhea it serves a good purpose by diminishing the number of discharges, and in disinfecting the intestine. It also has the quality of being pleasant to take—no small advantage in the treatment of children." (Watkins.)

Subnitrate of bismuth is a mild, protective astringent, sedative, tonic and antacid. In very large doses it is an irritant.

Indications.—Uneasy sensations or pain in the stomach, with eructations of acid, or acrid materials; weight in the stomach, with fullness, and cramping after eating; diarrhea of typhoid fever; irritation of the stomach near the close of digestion; diseases of the stomach when the tongue is red, pointed and elongated. Locally: Ulcers and diseases of the mucous tissues, with profuse discharges.

Dose.—1 to 15 grains.

Usual Dose.—1 to 5 grains.

Brayera Anthelmintica—Kosso or Kousso.

Kosso is efficient as a remedy for the removal of intestinal worms from children. For a few days previous to taking the medicine for the removel of tapeworm, the patient should live on a spare meat diet, avoiding eggs, vegetables and fruit. On the evening before commencing the treatment but little food should be taken, and on the morning of the day when the medicine is to be taken, nothing but a cup of well-sweetened black coffee. Then three drachms of the fluid extract should be administered, and in one-half hour another dose of the same amount. The medicine may be given in lemonade or sweetened water. The patient should keep very quiet to prevent vomiting, and a few drops of lemon juice should be taken for the same purpose. If the bowels do not move within three hours after the last dose, half an ounce of castor oil should be administered.

Indications.—Symptoms of intestinal worms.

Dose.—Fluid extract, 2 drachms to 1 ounce.

Usual Prescription.—℞ Brayera, ʒi; simple syrup, ℥i. M. Sig. Dose, one teaspoonful before meals.

Bromoformum—Bromoform.

In whooping cough this agent is said to reduce the paroxysms in number, severity and duration. It also controls the vomiting and hemorrhage which are so often unpleasant features of the disease. It promotes sleep, and under the influence of the drug the night cough becomes less frequent and less severe. Acording to the testimony of prominent physicians who have employed

bromoform in whooping cough, the results named are usually apparent in from three to seven days.

Bromoform is antispasmodic, antiseptic, analgesic and anesthetic.

Indications.—Whooping cough.

Dose.—1 drop in a teaspoonful of water for a child three to four weeks old three or four times a day; for older infants, 2 to 3 drops three times a day, according to the severity of the affection; for children two to four years of age, 4 or 5 drops three or four times a day; for children five to seven years old, 6 or 7 drops three or four times a day.

Bryonia Alba—Bryony.

One of the most important actions of bryonia is that of a sedative to serous membranes, and it is, therefore, an indicated remedy in all cases of irritation of such membranes. In pleurisy it is nearly always essential to a good treatment, and when effusion has taken place it will induce absorption of the fluid in many cases which would prove fatal were this medicament neglected. In this disease, as well as in pneumonia, when there is tensive, sharp or lancinating pain, its relieving influence is promptly manifested. In bronchitis, with sharp or hacking cough, especially when the substance expectorated is bloody or frothy, it will not only relieve the distressing cough, but also lower the temperature to a satisfactory point. In fact, all acute inflammations of the thoracic viscera and of the pleura are readily controlled by the subduing and curative power of bryonia. It is an efficient remedy in acute rheumatic inflammation of the heart or pericardium, and in endocarditis, especially when there is effusion with apparent lessened power of the heart, its influence is markedly beneficial.

In peritonitis bryonia will do much toward controlling the inflammatory processes and subduing the fever, and in typhoid conditions, with accompanying high fever, it affords a kindly means of regulating the temperature.

In nearly all rheumatic conditions its timely administration will exert an influence which may confidently be expected to make for improvement. In rheumatism of the joints, especially of the joints of the fingers, its relieving power is so decided that

it cannot be mistaken. Headaches of a rheumatic origin are also promptly relieved by this agent.

"Much of the success of Eclectic physicians in the treatment of lung diseases is the result of the frequent use of specific bryonia. It is the remedy for the sharp, cutting, and lancinating pain, with harsh cough. It is equally valuable when the pain is tearing, especially when aggravated by motion; and when there is a large quantity of mucus within the bronchioles, as evidenced by the loud mucous *râles*. When the pulse is hard, frequent and vibratile, and the temperature is elevated, bryonia is indicated. It acts best in small doses. It frees the circulation, lowers temperature, and controls pain. It is the remedy for inflammation of serous tissues. It lessens nervous excitation, and promotes secretion and excretion. In rheumatic conditions of the chest and in pleurodynia, it is valuable, especially if the pain be sharp and is aggravated by motion. Its best results are observed in pleurisy. In simple pleuritis from cold aconite alone is sufficient; but that form of pleurisy which is insidious and complicated is best treated with bryonia, and in the second stage it hastens the removal of effused material. In the so-called 'bilious' pleurisy, with jaundice and a burning sensation in the lungs and tenacious mucous expectoration, it proves an excellent drug. In pleuro-pneumonia it may be given for its absorptive qualities. Bronchitis, with frothy, blood-streaked expectoration; pneumonia with sharp pleuritic pain, or with harsh, harassing cough; and in cough aggravated or excited by talking, walking, or tickling in the throat, or by vomiting, it is always indicated. It is beneficial in typhoid pneumonia, but should be associated with baptisia. It is valuable in phthisis to control pain, lessen temperature, and to allay the troublesome cough. Probably no remedy, excepting gelsemium, was so frequently indicated to control cough and pain in the recent epidemic of 'la grippe.' In nearly all cases in which bryonia is employed it should be associated with aconite, veratrum, or gelsemium. The indications are the sharp, cutting or tearing pain from the inflammation of serous tissues; the hard, frequent pulse; the painful, irritative cough, and the flushed right cheek and frontal pain extending to the occiput.

"The most marked symptom indicating its use, that I have noticed, is a dusky flushing of the cheeks, especially over the right malar. Pain in the right side of the face and head, burning in eyes and nose, with acrid nasal discharge. The pulse is full and hard, urine scanty, and bowels constipated. With the first symptom named I should prescibe it in any form of disease, though it is used most frequently in rheumatism, pneumonia and catarrhal affections.

"If in disease the person has a short cough, or makes an effort to free the lungs, no disease of air passages being present,

we would think of bryonia. So if there is pain in serous membranes, or pain simulating this, the remedy is suggested: thus in rheumatism involving the synovial membranes we would be likely to prescribe this remedy.

"Outside of the general indications for the exhibition of bryonia alba, such as rheumatism affecting the joints, inflammation of serous membranes, the pulse, etc., in debating whether to give it in a case of facial neuralgia or headache, a most positive indication for its use seems to be a *hyperesthesia,* or an extreme sensitiveness to the touch, of the scalp and face. This is not difficult to determine, for the patient will remark that the *head is so sore* he can not bear anything to touch it." (Scudder.)

"I am convinced that the time has arrived in the study, investigation and application of this important remedy, when it should be given a conspicuous place in scientific medicine. Not only by our own physicians should this be done but by those of the entire profession. The results obtained from the action of this drug, when scientifically administered, are more satisfactory —more exact and reliable—than those obtained from a large proportion of the remedies in common use.

"There are probably twenty thousand physicians in the United States who depend upon this remedy in very critical conditions to the exclusion of those advised in the best known works on therapeutics.

"In large doses bryonia is an active hydragogue cathartic, and sometimes causes inflammation of the stomach and bowels. In poisonous doses it causes a fall of temperature, dizziness, delirium, cold perspiration, dilated pupils and other evidences of a depressing action on the nervous system.

"It causes serious gastro-intestinal inflammation when taken internally in large doses. A profuse and uncontrollable diarrhea, vomiting, reduction of temperature, extremely small pulse and colic, collapse and death have resulted from its use. The recent root is highly irritant when locally applied and capable of producing vesication.

"In small doses the agent seems to increase the action of the peripheral nerves, and promote free capillary circulation. At the same time it abates increased arterial tension; reduces the frequency and tonicity of the pulse, assists in the elimination of heat, and materially lessens the temperature. It expends a large portion of its influence upon the serous and synovial membranes, acting upon these in every way similar to the influence of aconite upon the mucous membranes, and I think through a similar influence upon the peripheral nerves. At the same time, it acts upon the viscera enveloped in the serous membranes. This accounts for its direct influence in the various forms of enteritis, in

bronchitis, pneumonia, and broncho-pneumonia, and in inflammations of the glandular organs.

We have but little, if any, use for the remedy in large doses; its full medicinal effect is obtained from comparatively small doses, always short of any irritating or depressing influence. It will be sufficient to prescribe twenty drops, of a good tincture, or from ten to fifteen drops of a specific medicine in four ounces of water, and of this to administer a teaspoonful every half hour or hour.

"In peritonitis with quick, sharp pain, flushed face and anxious countenance, bryonia is indicated. This agent, in mild cases, will subdue all the inflammatory processes and control the pain most satisfactorily, usually without opium. Auxiliary measures, however, should not be neglected.

"During the early stages of any inflammation in which bryonia seems to be indicated, aconite will facilitate its action and assist in the control of the processes, but as stated before bryonia can be continued to most excellent advantage when the results of inflammation are extreme, and weakness and prostration are present, when aconite would have a depressing effect and be contraindicated.

"In acute pericarditis and endocarditis the specific indications for this agent are often present, and its influence is prompt. It will be of great service if there is effusion with evidences of decreasing power of the heart. In acute rheumatic inflammation of the heart or of the pericardium, it is one of the most direct remedies. Properly combined with indicated auxiliary measures, no remedy will act more satisfactorily.

"It is thus of much value in typhoid conditions, especially in pneumonitis with typhoid complications. In typhoid fever with severe enteric symptoms this agent is often of great service in restraining the retrograde processes and controlling excessive temperature. In septic fever its influence will be marked and valuable. In septic peritonitis, it may be given alternately with aconite.

"Bryonia is indicated in rheumatic fever and in acute arthritis. It must be given as in other acute conditions, in small doses frequently repeated. In muscular rheumatism and in rheumatic muscular pains it will accomplish good results if given in conjunction with cimicifuga, or in alternation with cimicifuga and aconite. In acute rheumatism of the joints of the fingers or hands it seems to be of especial value.

"It is used in inflammation of the liver, with its direct indications. In many cases of acute jaundice these indications will be found present, and its action will then be most salutary.

"In mastitis or orchitis it is useful if the fever be high, the pains sharp and cutting and the face flushed, the influence will be

prompt indeed. In these cases it is seldom given alone but usually with aconite, phytolacca decandra or other direct remedy.

"This remedy has recently been brought forward as a specific in the active stage of the various forms of acute meningitis. I have had no opportunity to try it, but I am assured by those who have long depended upon it that it can be depended upon, even in the severest cases, to promote the desired results in a prompt and satisfactory manner." (Ellingwood.)

Bryonia is sedative, diuretic, antirheumatic and nervine. In large doses it is a drastic cathartic and a heart depressant. In long continued medium doses it sometimes causes bleeding at the nose. It is well to bear this fact in mind while considering a possible case of typhoid fever.

Indications.—Difficult breathing, with painful, harassing cough, which is made worse by coughing; pneumonia when there is tensive, tearing or sharp, lancinating pain; hacking cough; pleurisy when there is sharp and lancinating pain; diseases of serous membranes when there is tensive, tearing or cutting pain; rheumatism when the pain is of a tensive and cutting character, and aggravated by motion; inflammation of the mammary glands when there is costal pain and soreness; headache on right side, extending from the forehead to the occiput, when the pain is constant and severe, but without sharpness; rheumatism about the joints, characterized by stiffness, soreness and swelling; paralysis following rheumatism; profuse diarrhea when the discharges are of a clay color; catarrhal conditions, with acrid, burning, watery discharges from the nose; frothy bronchial expectoration, streaked with blood; muscular pains about the chest.

Dose.—Fluid extract, 1 to 2 drops; specific medicine, 1-10 to 2 drops.

Usual Prescription.—℞ Bryonia, gtt. iii to x; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Cactus Grandiflorus—Night-Blooming Cereus.

The range of usefulness of cactus is extensive, and the more fully one becomes acquainted with its valuable properties the more successful will one become in the treatment of a class of wrongs of life which is numerous. Our most eminent investigators have long since clearly demonstrated the fact that cactus exerts a most decided influence over the cardiac plexus of the sympa-

thetic, and that its effects are not only extended to the most minute distribution of the nerves, but to every capillary in the body as well. They also agree that it stimulates the vasomotor centers, the sympathetic ganglia of the spinal cord and the muscles of the heart.

Cactus is a remedy of positive therapeutic action, and its results are usually so plainly manifested that it is impossible for one to overlook them. It seldom, if ever, disturbs the stomach, but if given in overdoses it will produce toxic effects, causing irritant diarrhea, neuralgia, spasms of the heart, and sometimes carditis and pericarditis. In medicinal doses it may be continued as long as may be deemed necessary, as it has no cumulative effect.

In the treatment of the aged cactus fills an important place, and my experience in practice teaches me that if anything will keep their old, weary hearts in a condition to supply their tissues with life-sustaining blood, cactus will accomplish it.

In impaired action of the heart, whether functional or organic, cactus is a most efficient remedy. Of course, it cannot be expected to cure structural diseases of the heart, but in such diseases when the action of the heart is irregular or intermittent, or when there is regurgitation due to valvular insufficiency, it will strengthen the impaired muscle. Cactus will not close dilated openings, or overcome valvular deficiency, but it will do much toward sustaining and bringing about a better action of the permanently diseased heart. In fatty degeneration of the heart, it acts equally well, but in mitral stenosis it is said to be contraindicated.

In endocarditis, pericarditis and myocarditis much benefit is derived from the use of cactus, and in angina pectoris it may well constitute a part of the treatment. It is an absolutely needed remedy in cardiac weakness and threatened heart failure due to exhaustion from over-exertion. In neurasthenia of old age, and in nervous exhaustion, the judicious administration of cactus will produce results pleasing alike to patient and doctor. It also constitutes a medicament well adapted to the treatment of the "tobacco heart" of cigarette fiends and the inveterate smoker. In these cases the patient will complain of precordial oppression, or the sensation of a band tightly bound about the body or the organ or part affected. With this latter symptom—it matters

not where it is located—we have a call for cactus which should never be neglected.

Cactus is especially adapted to the treatment of nervous women who are afflicted with cerebral congestion, heavy pain and weight in the head, numbness of the arms and legs, inability to lie on the left side, and menstrual troubles. It is also an excellent remedy at the climacteric in nervous women.

Although cactus is most frequently indicated in cases in which there is no increase in temperature, it is not contraindicated in fever, and in many cases of pneumonia and other fevers it is often a remedy of the utmost importance.

"Nearly all agree that cactus acts decidedly upon the cardiac plexus of the sympathetic, and that, therefore, its effects are as far-reaching as are not only the minute distributions of this nerve, but even so far as to reach and affect the lumen of every capillary in the body. Two things are of absolute necessity to the well-being of every mortal: they are *good blood* and its *good* distribution or circulation. Then, these are so interdependent that their respective values to the organism cannot be differentiated. It is enough for our purpose just now to hint that all heart remedies, etc., must fail unless there be good blood-making going on at the time the remedy is given, and that it is therefore a necessity that digestion and assimilation must not only be not disturbed, but must be fostered and favored through every means. With good blood and plenty of it, and a heart that can send this same good blood to every particular cell in the body, there is little chance indeed for the existence of pathologic influences, or for them to make any progress if they be permitted to exist.

"So then we will say that cactus under certain conditions is such a remedy; it stimulates the vasomotor centers, the sympathetic ganglia of the spinal cord and of the heart muscle. Usually, it does not disturb the stomach, etc., yet, when given in sufficient doses, it does produce physiologic, or toxic effects. They are irritant in character, even to the production of diarrhea, spasm of the heart, neuralgia, carditis and pericarditis. This is true only of overdoses. Its long-continued use in medicinal doses has no baneful effect. It has no so-called cumulative action, like digitalis and some other drugs.

"Recorded experiences of observers of the action of this remedy differ widely. We believe it is because of the varying strength of the preparations employed and the fact that several species of cactus are sold for cactus grandiflorus, as well as the drug must be carefully and quickly prepared after being cut. It is difficult to make a perfect pharmaceutical preparation of cactus

of full strength, because of the abundance of water in the green drug, and, according to Prof. Lloyd, it must be worked at once, after being cut. There are several reasons for inferior preparations of cactus being on the drug market, one being the scarcity and expense of the genuine drug. Then, again, the cases to which it was given were not always well selected. We give cactus with as much confidence as we do digitalis, nitro-glycerine, or any other of the class of remedies to which it belongs. It is, however, not so rapid in its action as some of these. Our experience is based wholly upon the specific medicine which is used in doses varying from five drops to one drachm in four ounces of water, of which a teaspoonful is given from every half hour to two hours. The specific medicine is made from the green stem of the true species of the plant.

"As to the action of cactus, Prof. Scudder, in his writings, seemed quite positive that it was 'neither sedative nor stimulant.' Prof. Locke remarks that according to our view, cactus is sedative but not depressant. Cactus is both stimulant and sedative; but the effect in either case is secondary. We believe that its action is specifically through the sympathetic nervous supply, the cardiac plexus. The nutrition of the heart-muscle is permanently increased, and it has greater contractile power, and rhythm is strengthened and regulated.

"The continued use of cactus is followed by no unpleasant effects, though it is said that overdoses cause gastric irritation, the belching of acrid gases and distressing diarrhea. The indications calling for cactus as a remedy are, feeble, irregular, quick, nervous, irritable pulse; oppression in the chest as if in an iron grip; unpleasant pain, heart stitches, palpitation, mental depression, hypochondria. With these guide-posts before us, cactus is used in 'heart disease,' both functional and structural. Of course, for the palpitation and disturbances due to stomachic distension and other reflex troubles, cactus is *not* the remedy. But for the weak heart of the typhoid fever patient, when he is convalescing, or before or after; for the bad heart of the chronic indulger in strong drink—the toper; in the exhausted heart muscle of the worn out dyspeptic; in the fond but frail heart of the too frequent worshiper at the throne of Venus; in sexual exhaustion; in the palpitation and disturbances of exophthalmic goitre; in aortic regurgitation due to weak heart tissue, cactus is the remedy *par excellence*. In structural lesions, though it will not correct the wrong, we believe cactus will do as much as any remedy to alleviate. It will help matters when the heart is worried from valvular insufficiency; it should strengthen a fatty, degenerated heart, and it should, to a degree, relieve uncompensated valvular disease in relative incompetency due to muscular degeneration. It is said to be contraindicated in mitral stenosis, and that its administration favors hemorrhage; while, on the other hand,

Prof. Webster says that cactus is the remedy *par excellence* in hemoptysis.

"Cactus is a remedy in fever or inflammation of any or all kinds when from long continuance heart failure is threatened. It is an excellent remedy in *nervous* diseases, when the heart is disturbed." (Bloyer.)

"It is especially in *functional* disorders of the heart that cactus is most useful; in these cases we now rarely prescribe any other cardiac remedy. In the distressing palpitation from reflex irritation in dyspepsia it scarcely ever fails to give immediate relief. One of our most striking cases was that of a highly neurotic lady, who about the climacteric period suffered from dyspepsia, and to whom we were hastily summoned in the middle of the night 'as she was dying.' On arriving at the house we found her last will and testament being rapidly prepared for her signature ere it was too late. The patient was found intensely agitated, sitting up in bed, being unable to lie down, and gasping out that she was dying. She complained of a violent beating and 'trembling of the heart.' We found that she had a rapid, but strong and regular pulse, and the heart sounds were perfectly clear. We were able to reassure the patient and promise a speedy recovery; she was quickly relieved by small doses of cactus. We recently had another exactly similar case, with less dramatic surroundings, in which cactus proved equally effective. In these cases of purely functional palpitation the attacks generally come on when the patient is resting and pass off on exertion; they are most frequent and most distressing when the patient is at rest in bed. We have obtained the best results in this class of cases with small doses, half to one minim, every quarter of an hour during the attack, and two or three minims added to a simple bismuth mixture, three times daily.

"Palpitation in anemia is less distinctly benefited by the administration of cactus alone; some cases are relieved to a certain extent. An anemic girl, aged twenty-eight, with a healthy heart, complained greatly of palpitation on the least exertion and after meals. In addition to iron pills, we gave her a dose of tincture of cactus (gtt. ii in chloroform water), to be taken in the manner indicated above when the attacks came on, and occasionally in the intervals. She found that a single dose relieved the palpitation at once. When menorrhagia, or metrorrhagia, or dysmenorrhea, are accompanied by palpitation, cactus may be advantageously combined with other remedies.

"In several cases of Grave's disease we have succeeded in greatly relieving the palpitation and nervousness. We may briefly refer to a female patient aged sixty-three. She complained chiefly of attacks of palpitation and an indescribable sense of fear associated with these attacks. For five weeks previously she had at-

tacks coming on every night about 1 A.M., which prevented her lying down and kept her awake the rest of the night, and never a day passed without one or more similar attacks. She had a soft mitral *bruit* at the apex, pulse 168, regular. Von Graefe's symptom was present, but proptosis was only slight, and the thyroid gland was not enlarged. We gave her five minims of cactus every four hours, and she passed an excellent night without any palpitation, nor had she any attack for a whole week. In twenty-four hours the pulse was reduced to 94 a minute. We recently attended a gentleman, aged seventy-two, with dilatation and relative incompetence of the mitral valve. He had a rapidly-acting, feeble heart, a very irregular and sometimes intermitting pulse, many cardiac contractions failing to produce a pulse at the wrist, orthopnea, scanty urine with one-fourth albumin, and some dropsy. He was at first greatly relieved by digitalis, but not till pushed to fifteen minims every four hours, with trinitrin gr. 1-50. Very soon, however, toxic symptoms occurred, the pulse began to get irregular, and nausea and diarrhea came on. We then gave tincture of cactus, rapidly increased to twenty minims every four hours; with this he speedily improved and soon became convalescent." (Williams.)

"The influence of cactus seems to be wholly exerted on the sympathetic nervous system, and especially upon and through the cardiac plexus. It does not seem to increase or depress innervation, but rather to influence a regular performance of function. I am satisfied, however, that its continued use improves the nutrition of the heart, thus permanently strengthening the organ. It has a second influence, which is of much importance to the therapeutist. It exerts a direct influence upon the circulation and nutrition of the brain, and may thus be employed with advantage in some diseases of this organ. We can see very readily how this may be. The cardiac nerves are derived from the upper part of the sympathetic, and, judging from the anatomy of the part, the first cervical ganglion, being the principal nervous mass in the cervical region, must furnish innervation through the cardiac nerves, as it certainly controls the circulation and nutrition of the brain.

"The cactus is a *specific* in heart disease, in that it gives strength and regularity to the innervation of the organ. Its influence is permanent, in that it influences the waste and nutrition of the heart, increasing its strength. It exerts no influence upon the inflammatory process, and hence is not a remedy for inflammatory disease.

"Feelings of weight and pressure at the precordia, difficult breathing, fear of impending danger, etc., are at once removed. Such irregularity of action, whether violent, feeble or irregular, as is dependent upon the innervation, is readily controlled. Thus,

in the majority of cases of *functional* heart disease, it gives prompt relief, and, if continued, will effect a cure. In those cases in which there is another lesion acting as a cause, as in some gastric, enteric, or uterine lesions, these must receive attention, and be removed to make the cure radical.

"In structural heart disease, the first use of remedies is to relieve the distressing sensations in the region of the heart, and the unnatural fear of danger which attends them. As these spring from disordered innervation, in the majority of cases, the cactus gives prompt relief. As we have seen above, its continuance favors normal waste and nutrition, as well as regular action. Hence, its continued use is followed by the removal of adventitious tissue, and an increase in the strength of its contractile fibre. Thus it proves curative in many cases of structural heart disease.

"I have some cases on my case-book of such aggravated form that no one would believe they could live a twelve-month; yet, after a lapse of five years, they are enjoying comfortable health.

"But it will not relieve or cure cases of valvular deficiency, dilatation of the openings of the heart, or fatty degeneration. It is well, in estimating its action, to bear this in mind.

"In its influence upon the nervous system, it more nearly resembles pulsatilla; giving relief in that condition known as nervousness. But further than this, it gives regularity of cerebral function, and permanently improves nutrition of the nervous centers." (Scudder.)

Cactus grandiflorus is tonic, sedative and diuretic. In very large doses it causes gastric irritation, confusion of the mind, hallucinations and slight delirium.

Indications.—Irregular action of the heart; uneasy sensations in the region of the heart; intermittent pulse; sensation as if a band was tightly bound around the chest or head; palpitation; shortness of breath on slight exertion; fear of impending danger.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, ½ to 10 drops.

Usual Prescription.—℞ Cactus grandiflorus, gtt. v to ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every hour to every three hours.

Caffeinæ—Caffeine.

Caffeine is extensively employed with satisfactory results in cardiac and renal dropsy, and in pleuritic effusion it has proved a useful medicament. It is often used in valvular disease accompanied by fatty heart, and some physicians believe that in this

condition it is superior to digitalis as a cardiac stimulant. It is also frequently employed as a means of counteracting cardiac depression in low fevers.

Caffeine exerts an unmistakable tonic influence upon the digestive system, and through this influence becomes a useful remedy in some atonic conditions of the stomach. Some cases of migraine, due either to gastric catarrh or nervousness, promptly yield to the action of this drug. It is also an efficient remedial agent in shock, and in all poisoning associated with low blood pressure and respiratory depression it is said to have proved useful. In several cases reported it was claimed that caffeine had proved a valuable aid in the reduction of hernia after taxis had failed. In these cases it was administered hypodermically. A strong decoction of coffee is said to have the same effect.

In some cases the primary action of caffeine is to increase the pulse rate, but if the remedy is adapted to the case there is a secondary slowing of the heart's action. It is much used as a substitute for digitalis. Its action is more rapid and it possesses no cumulative effects. It regulates the heart's action and causes the removal of the edema through increased diuresis.

Caffeine is diuretic, cardiac stimulant and antiemetic.

Indications.—Difficult breathing of asthma; depression of the circulation, headaches and neuralgias, with enfeebled circulation; stupor of uremia; opium narcosis; diarrhea of phthisis; chronic catarrh of the stomach; cardiac affections.

Dose.—1 to 5 grains; citrate, 1 to 5 grains.

Usual Dose.—1 to 2 grains of the citrate.

Calcarea Carbonica—Oyster Shell.

Calcarea carbonica has been somewhat extensively employed in the treatment of abnormal conditions, and has often constituted a useful medicament. It exerts an improving influence upon mucous tissue, and is, therefore, of value in all diseases characterized by relaxed mucous membranes with inflammatory action in the mucous glands.

"Calcarea ostrearum is prepared from the middle layer of the oyster shell in its fresh state, and is an animalized preparation, representing properties due to organic growth, which would be destroyed if subjected to incineration. The soft white substance

lying between the external and internal hard layers of the shell is triturated and prepared in dilutions and triturations for medicinal use, and is commonly labeled as calcarea carbonica, though it is evident that it represents something quite different from ordinary carbonate of lime. . . . .

"Calcarea ostrearum possesses a specific affinity for mucous membranes. It is most applicable to affections of mucous membranes in strumous subjects, but it is also applicable to any subject presenting indications for it, whether strumous or not. It improves the vitality of relaxed mucous tissue with inflammatory action in the mucous glands, especially if that inflammation be of subacute character and attended by profuse secretion from the mucous follicles. Hypersecretion, however, is not essential to its application, when persistent irritation of subacute or chronic nature is present. After a cough has passed its acute stage, we have nothing which so commends itself to those who have become acquainted with it as this agent. Long continued use is not essential to the obtaining of its beneficial effects. The answer is prompt and satisfactory within a few days, and often within a few hours.

"Of course, we must not neglect specific indications for other remedies when these are pronounced, but where there is persistent pulmonary irritation with attendant cough, we may think of calcarea with confidence and profit in most instances. Especially is this the case where there is profuse expectoration and the cough is painless, with easy raising of the material. Profuse secretion, however, need not be a requisite. Chronic irritation, involving the mucous follicles, would be indication enough for its use. Old cases of capillary bronchitis furnish a splendid place for its administration, though here we may find it well to alternate minute doses of tartar emetic. It is particularly efficacious in persistent coughs in children and the aged. If there is a remedy which will promptly arrest incipient catarrhal phthisis in a strumous child, this is one. It will not cure tuberculosis, but it will go very near the dividing line. As a tonic to the pulmonary mucous membrane in convalescence from bronchitis, whooping cough, measles, and other conditions liable to be attended by strain upon the respiratory surface, nothing is more liable to produce happy results. Its influence is pervading, extending all over the respiratory surfaces, from the nares and their reflections to the limits of the pulmonary alveoli. It is one of the best remedies we possess in post-nasal and pharyngeal catarrh, and it alternates well with specific laryngeal remedies in chronic laryngitis, to control profuse secretion. Its influence is always soothing where there is irritation, while it is also markedly restorative and tonic in its effect." (Webster.)

Calcarea carbonica is tonic, restorative and alterative. It must

not be confounded with the carbonate of lime produced by incineration.

Indications.—Chronic irritation, involving the mucous follicles; atonic condition of mucous membranes; profuse secretion from the mucous follicles; cough after the acute stage has passed; pulmonary irritation with attendant cough, especially when there is profuse expectoration.

Dose.—Trituration, 3x, 2 to 4 grains.

Usual Dose.—2 to 3 grains.

Calcarea Fluorica—Trituration of Fluoride of Lime.

In diseases involving the substance forming the surface of bone, enamel of the teeth, and part of all elastic tissue, whether of the skin, the connective tissue, or the walls of the blood-vessels the fluoride of lime is likely to constitute a useful medicament. Having this knowledge of the salt in mind, it will be suggested as a possible remedial agent in all diseases which can be traced to relaxation of any of the elastic fibers, including dilatation of the blood-vessels, arterial and venous blood tumors, varicose and enlarged veins, hard indurated glands, malnutrition of bones, pendulous abdomen and in some cases of uterine displacement.

In coughs characterized by tickling and irritation of the throat on lying down, caused by elongation of the uvula, or droppings at the back of the throat, calcarea fluorica is often a very useful remedy, and in stuffy colds in the head it exerts a corrective influence. In various forms of catarrh, especially when the expectoration consists chiefly of yellowish small lumps, it has been used with marked advantage, and when there are sparks before the eyes, spots on the cornea and induration in the eyelids it has been found useful. In conjunctivitis and enlargement of the meibomian glands this salt of calcium has also been found useful. In gouty enlargement of the finger joints its influence is unmistakably curative, and as a means of aiding dentition it is often valuable. It is also an efficient remedy in the vomiting of infants during the period of dentition. Weak infants, having thin skulls and open fontanelles, under the influence of this agent have been greatly benefited, and knotty substances which are sometimes found in the female breast have been caused to disappear through its continued use.

In enlargement of the heart, with feeble action of the organ,

calcarea fluorica has been employed with advantage, and in dilatation of blood-vessels, it is a very useful drug. In varicose ulcers it aids much in the treatment, and in varicose veins about the vulva Dr. Porter has found it a very efficient remedial agent. He also employed it with excellent success in distension of the ovarian and subovarian plexus of veins.

Calcarea fluorica possesses the power of strengthening the elastic tissue of the gravid uterus, and thus causing parturition to become less painful. When after-pains are feeble and inefficient it increases and regulates contractions. It is also of value when there are excessive bearing-down pains and a tendency to flooding. In pelvic abscesses resulting from caries of bone, it has been used with beneficial effect, and when suppurative processes affect the bone it is a most useful remedial agent. It is also useful in old cases of fistulous sinuses of the mammary glands.

When there are symptoms of acidity calcarea fluorica is often very efficient as a means of removing long, round, or thread-worms. The drug is supposed to act by destroying the excess of lactic acid which seems to be necessary for the maintenance of the life of the worms.

In indurated lymph glands calcarea fluorica tones up the walls of the blood-vessels and thus favors absorption, and when there are hard swellings in the soft tissues it acts in a curative direction. It is also a useful remedy in bony excrescences.

Indications.—Varicose and enlarged veins; blood tumors and piles; dilatation of blood vessels; malnutrition of bone, especially of the teeth; indurated glands of extreme hardness; hard lumps in the mammary glands; ulcers of the scalp with callous, hard edges; tumors of the eyelids; osseous growths; vascular tumors with dilated blood-vessels; chronic synovitis; cystic tumors caused by strain of the elastic fibers; whitlow or felons; suppuration of bones; exudation from surface of bones which quickly hardens.

Dose.—Trituration, 3x, 5 to 15 grains.

Usual Prescription.—℞ Calcarea fluorica, 3x, gr. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour to every three hours.

Calcarea Phosphorica—Trituration of Phosphate of Lime.

Calcarea phosphorica is employed with curative results in diseases which are caused by an abnormal action of the lime mole-

cules in the body, such, for instance, as the unnatural growth and impaired nutrition of bones and other textures found in rickets and similar diseased conditions. Having ascertained this much of the action of the phosphate of lime, it readily becomes apparent that it must be indicated in all bone diseases resulting from or depending on a depraved quality of the blood, as well as in many abnormal states, including diseases which involve the skin.

In all cases in which, from any cause, an insufficient amount of the phosphate of lime is assimilated to supply the needs of the body, causing imperfect cell growth, and consequently destruction of tissue, especially of the osseous and glandular systems, calcarea phosphorica becomes a medicament of great usefulness. In the convulsions which sometimes afflict weakly, scrofulous children during dentition, it exerts a restraining influence, and many times increases nutrition. It also possesses a power which is of value in acute diseases, either directly, or in preparing the way for other indicated remedial agents, by stimulating the system to more vigorous action.

In chronic wasting diseases the phosphate of lime exerts a tonic influence which is often of the greatest value to the patient, and when the phosphates in excess are found in the urine, showing imperfect secondary assimilation and inefficient working of the excretory organs, it is used with advantage. It has also been employed with improving results in anemia of young and rapidly growing people, and its tonic influence has frequently been decidedly marked in cases of women weakened by too frequent child-bearing, prolonged nursing or excessive menstruation and leucorrhea. In diseases accompanied by an exhaustive discharge, such as bronchitis, tubercular diarrhea and night-sweats, its action is corrective in its direction, and in abscesses and scrofulous sores its influence on the secretions is such as to enable it to act curatively.

In old age, when the regenerative function decreases in the nervous tissue it often exerts an influence which conserves vitality, and in senile cutaneous and vaginal itching its action is decidedly corrective.

In tuberculosis, when there is great emaciation, hemoptysis and night sweats, the judicious employment of this preparation of the phosphate of lime often perceptibly mitigates the patient's

sufferings, and in the osseous enlargement of rachitic children it is used with much advantage. This preparation of the phosphate of lime, in ten-grain doses three times a day, has been highly recommended as an efficient remedy in chlorosis, and in chorea occurring during puberty it is said that the same amount of the drug exerts a quieting influence and aids much in the treatment. Its action in the spasms and pains which are sometimes caused by anemia is in a curative direction. Pains of this character are often accompanied by formication, sensations of coldness and numbness. This agent is often useful in the treatment of pains situated at points where bones form sutures or symphyses, and in numb, crawling pains caused by chilliness due to anemia and a tendency to perspiration and glandular enlargement, its action is decidedly corrective. Headaches of young girls who are maturing and are nervous and restless as well as often troubled with a diarrhea resulting from an immoderate use of jellies and sour articles of food, are often promptly relieved by small doses of calcarea phosphorica. Its use also acts as a preventive of such headaches. The phosphate of lime is employed with great benefit in chronic catarrh of the ears, accompanied by throat affections, and in cold in the head, with albuminous discharge from the nose, it is often the only needed remedy. In chronic enlargement of the tonsils, and in clergymen's sore throat its beneficial action is unmistakable. In marasmus and enlargement of the mesenteric glands it is believed by many physicians to be essential to a good treatment, and in cases where the teeth develop slowly or too rapidly decay, the phosphate of lime constitutes a much-needed remedial agent.

In cholera infantum, when the stools are watery, profuse, scalding, and very offensive, calcarea phosphate will exert an influence which will aid much in the treatment. It is also useful in the common summer complaint of children, and it often removes a disposition to intestinal worms in anemic and weakly children. "Wetting the bed," so common in young children, also comes within the range of the usefulness of this agent. Enuresis in old people is much modified by the continual use of the phosphate of lime, and its action is of a decidedly relieving character in the itching and soreness likely to afflict anemic persons who are victims of chronic gonorrhea. In senile itching of the skin it is also a useful agent. As a means of preventing

the reformation of gravel, calculus, and phosphatic deposits, calcarea phosphate has often been employed with advantage. In rheumatic gout, with severe cramps in the calves of the legs, it has been used with some benefit, but for the removal of cramps it is inferior to viburnum prunifolium. In neuralgia, the pain being deep-seated, as if in the bones, it is employed with a curative result, and in chronic synovitis it is used with much benefit. It exerts a quieting influence in children who start up from sleep in a frightened manner, but for this form of nervous irritation rhus toxicodendron is much more effective. Calcarea phosphate is also believed to be useful in spinal curvature in young girls, especially at puberty.

In the leucorrhea of young girls, when the discharge is like the white of an egg, and when menstruation is too frequent or too early, the phosphate of lime has been found useful as a constant tonic. It is also of value in the treatment of adults when the menses are too late and dark, especially when accompanied by great weakness, distress, and rheumatic pains before or during menstruation. In many of these cases the uterine pains are accompanied by a severe backache and a sensation of weakness in the uterine region. In the vaginal pruritus which often afflicts old women, it constitutes a very efficient constitutional *arresting suppuration.*

Indications.—Tardy formation of callus around the ends of fractured bones; unnatural growth and defective nutrition of bone, especially in rickets and similar diseased conditions; anemia of young, rapidly growing people; diseases characterized by exhaustive discharges, such as chronic bronchitis, tubercular diarrhea, and night sweats; abscesses and scrofulous sores; slow development of teeth; marasmus; chronic synovitis; eczema, with yellowish-white scabs or vesicles in anemic, scrofulous, or gouty constitutions; ulcers on cornea; chronic enlargement of the tonsils; heartburn and flatulency; catarrh in scrofulous or gouty constitutions; complexion dirty-white or brownish.

Dose.—Trituration, 3x, 5 to 15 grains.

Usual Prescription.—℞ Calcarea phosphorica, 3x, gr. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour to every three hours.

Calcarea Sulphurica—Triturate of Calcium Sulphate.

While this agent is not as frequently indicated as are some of the tissue salts, it often constitutes a medicament of more than ordinary usefulness. It exerts its greatest and most beneficial influence in conditions characterized by purulent discharges from mucous membranes or by purulent exudations in serous sacs. In tubercular ulcers and in abscesses of the intestines it is a remedy of considerable value. In suppurations, when employed at the stage in which pus is being discharged, calcarea sulphurica has been found useful, and in all diseases in which the process of discharge continues too long, and the suppuration is affecting the epithelial tissue, it is used with advantage. Dr. J. C. Morgan says that the sulphate of calcium has an especial action on the connective tissue, and that if there is a deficiency of the salt in any part of the body suppuration is likely to follow. He also says: "The presence of pus with a vent is the most prominent indication for the exhibition of the sulphate of calcium."

Calcarea sulphurica is an efficient remedy in that unpleasant condition commonly known as "scald-head," especially when there is a purulent discharge, or yellow purulent crusts. In the latter stage of ulcerated sore throat, especially when there is a discharge of yellowish matter, it is also of value, and in the suppurative stage of tonsillitis it is believed to be a curative agent of superior merit. Its action in the unpleasant condition which often causes festers, boils and pimples in many young persons, it is decidedly corrective, and its power of restraining the suppurative process is often of value in healing suppurating wounds.

In croup, when the stage of exudation has passed and the hard membrane has softened, but a tough mucus still accumulates in the throat, it is often useful as a means of removing the mucus and changing the croupous to a catarrhal cough. In ordinary colds, especially when there is a yellowish-green expectoration, or a purulent expectoration tinged with blood, its administration improves the condition of the mucous glands. In purulent diarrhea, when the stools are mixed with blood, as well as in dysentery, when the discharges are purulent and sanious in character, the sulphate of calcium has frequently proved an efficient remedial agent.

Dr. Betts has found calcarea sulphurica useful in extravasa-

tion of pus within the pelvic tissues unconfined by a pyogenic membrane, and also as a means of shortening the suppurating process and limiting the discharge of pus. It is deemed an efficient remedy in the treatment of wrongs of the female reproductive organs, and when the menses are delayed or continue an unusually long time, it has been employed with much benefit.

Evidently the sulphate of calcium should receive a much more careful study than has yet been given to it, for even the homeopathic indications which have been published are somewhat vague and uncertain.

Indications.—Scald-head accompanied by purulent discharge or yellow purulent crusts; deep-seated ulcers of the cornea; cold in the head, with thick, yellowish, purulent secretion; tongue flabby and resembling a layer of dried clay, with a yellow coating at base; suppurating sore throat; pus-like, slimy discharge from the bowels; purulent exudations in or upon the skin; purulent sores and suppurations.

Dose.—Trituration 3x, 5 to 15 grains.

Usual Prescription.—℞ Calcarea sulphurica, 3x, gr. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour to every three hours.

Calcis, Aqua—Lime Water.

Lime water is extensively employed as an antacid, and in many cases is preferable to any other alkali. This is especially the case in indigestion, with the formation of lactic acid from decomposing food. In such cases there is not infrequently an excess of the normal salts of the blood, and the salts of sodium and potassium cannot be used to neutralize gastric acidity. As a general rule lime water will be found beneficial in cases of infantile dyspepsia, and in dyspepsia of the adult with acid eructations during digestion.

The specific use of this agent is in cases of boils, and other inflammations of cellular tissue, terminating in suppuration.

Lime water and linseed oil, in equal parts, are used as an application in burns. The combination is applied on cotton saturated with the mixture by dipping into it. The application is usually allowed to remain on the burns until convalescence.

Lime water is antacid and astringent.

Indications.—Sour eructations; vomiting or spitting of food;

vomiting of curdled milk; tendency to the formation of uric acid; acidity of the stomach; diarrhea when the discharges contain curdled milk.

Dose.—4 drachms to 4 ounces.

Usual Dose.—10 drops to 4 drachms.

Calcii Bromidum—Bromide of Calcium.

The bromide of calcium has been long and successfully employed in chorea and hysteria, and in epilepsy its continued use results in an influence which is decidedly restraining. With some physicians it is a favorite remedy in the treatment of rachitic patients who need a sedative and hypnotic. It possesses superior sleep-producing powers, and has been used with great satisfaction in the sleeplessness of brain workers, whether the insomnia is due to business affairs or only mental worry. In some cases of delirium, where the anemic condition prevails, and where there are evidences of cerebral wrong, this medicament will be found useful.

The bromide of calcium is not depressing in its action, and it is, therefore, especially adapted to the treatment of children and the anemic. In mild cases of nervous irritation in infants the dose may be as small as one-tenth of a grain. The salt may be given in solution with milk.

The bromide of calcium is hypnotic and sedative.

Indications.—Sleeplessness, with or without nervous irritability; sleeplessness when dependent on congestion of the brain.

Dose.—5 to 30 drops. It should be kept well stoppered.

Usual Dose.—1 grain for each year of age up to twenty years. The dose should be repeated every hour or two until the desired effect is produced.

Calcii Chloridum—Chloride of Lime.

This agent has frequently been used internally, but we have much more desirable remedies that fully meet the indications for which it was administered. As a disinfectant the chloride of lime is employed externally, and in sprays and in vapor. It may be wet with well diluted vinegar, and old cloths dipped in the solution hung up on lines about the room. For washing articles used by a patient, a solution of one ounce and a half to a quart of

water is deemed sufficient. The powder may be added pure to fecal matters.

Indications.—Arthritic affections; glandular swellings; scrofulous enlargements of the neck; goitre.

Dose.—Calcii chloridi, liquor, 20 to 60 drops.

Usual Dose.—Calcii chloridi, liquor, 10 to 30 drops. This preparation is a solution of chloride of lime in water. It should be kept well stoppered.

Calcii Hypophosphis—Hypophosphite of Lime.

The hypophosphite of lime has been employed with advantage in many cases of chlorosis, and in anemia it is deemed a remedy of merit. It has also been highly recommended in scrofula and tuberculosis. It should be continued for a long time, as its best effects are slowly produced.

The hypophosphite of lime is a general tonic.

Indications.—Nervous prostration; tendency to scrofulous enlargements of the glands; abscesses; incipient phthisis; depression of nervous power, when the surface is pallid and the extremities are cold; lack of tone of the digestive organs.

Dose.—1 to 30 grains.

Usual Dose.—1 to 2 grains, in trituration, or in solution in glycerine or water, at meal times.

Calcii Phosphas Precipitata—Precipitated Phosphate of Lime.

The phosphate of calcium is often a useful remedy in cases in which exhausting discharges constitute a prominent feature of the affection.

Indications.—Wasting diseases; abscesses; scrofulous diseases; exhaustive discharges, such as occur in bronchitis, non-tubercular diarrhea and leucorrhea; defective nutrition of bones; anemia of young, rapidly growing persons.

Dose.—1 to 30 grains.

Usual Dose.—1 to 2 grains.

Calcii Sulphidum—Sulphide of Calcium.

The sulphide of calcium is extensively employed as a means of preventing suppuration, and it is deemed a superior agent for overcoming a tendency to the formation of boils. In nodular and

pustular suppurative inflammations, especially of the skin, it is used with marked success, and in carbuncles, acne, boils and small pustules its curative action is prompt and unmistakable. In syphilitic diseases, with persistent buboes or nodular or ulcerative skin eruptions, it is a most useful remedial agent.

The sulphide of calcium has been highly recommended in tubercular diseases of the joints and skin, as well as in tubercular conditions wherever located.

"Sulphide of calcium is a most powerful agent for good when fitted to the proper case. I know of no agent that will so disappoint or please, according to the proper use made of it.

"This agent is what is homeopathically known as hepar-sulphur, and it is customary to prescribe it in the 2d trituration, five grains at a dose, several times a day. I never prescribe this in pill form, as it has such a bad odor; also, if not fresh, is more nearly the sulphate than anything else.

"In very few words I can choose the cases in which to give this, and just *when* to give it. I give it internally to check suppuration. If a bad case of quinsy has ended in suppuration, as soon as the tonsil 'broke' I would stop the other remedies, and give sulphide of calcium. Just as the discharge begins following bad earache and 'gathering in the head,' this is the agent. This also gives the key to its use in suppurative troubles of the connective tissue, such as styes, etc.

"I have frequently prescribed it in nose and ear work and seen facial acne in the patient disappear. In many cases these pimples are a suppurative inflammation of the connective tissue under the skin, in which cases this agent will not disappoint." (W. B. Scudder.)

"The keynote for its use is *its power for preventing and arresting suppuration.*

"In inflammation threatening to end in suppuration it will avert the formation of pus. After the pus has really formed, its action is still more pronounced. Then it not only hastens maturation, but diminishes and circumscribes the inflammation, promotes the passage of pus to the surface, and the evacuation of the abscess.

"If you are looking for facts to prove these statements administer the one-tenth grain of sulphide of calcium every hour or two in some of your cases of tonsillitis when there is a tendency to form deep-seated abscesses in these glands, and watch the results. Compare these with what you have obtained before with other means. Take also some deep-seated abscess on other portions of the body and treat with the same sized dose and see how much quicker relief is procured. In both boils and car-

buncles this remedy will yield excellent results. The one-tenth grain given every one, two, or three hours will prevent the formation of fresh boils and also lessen the inflammation and reduce the area of those already existing. When the skin is not broken and the slow-separating core not yet exposed, the sulphide of calcium will often convert the boil into an abscess, so that on bursting, pus is freely discharged and the wound at once heals; or if the center of the hardened swollen tissues is not yet dead, the pustule dries up, the inflammation subsides, and a hard knot is left which disappears in a few days without the formation of a core, and without any discharge. The effect of this remedy is equally conspicuous in mammary abscesses, although in rare instances they appear temporarily to increase the pain—a fact which seems sometimes to hold good with respect to boils, though as a rule the pain is speedily mitigated.

"The good effects of sulphide of calcium are often observed in certain scrofulous sores not uncommonly seen in young children. They will readily yield to its use.

"It may be urged that it is difficult to imagine how this remedy can produce effects so different and apparently opposite as the dispersion of inflammation in one case and the expulsion of pus in another; poultices, however, and hot fomentations both subdue inflammation and prevent suppuration, and in other cases considerably hasten the evacuation of pus." (Howes.)

Indications.—Catarrhal diseases, with muco-purulent secretions; tendencies to suppuration; pustular diseases; glandular inflammations; boils and styes; mammary abscesses; catarrh with profuse secretion; chronic pharyngitis and atonic laryngeal diseases.

Dose.—⅛ to ½ grain.

Usual Dose.—1-10 of a grain, in trituration or pill, every three hours.

Calendula Officinalis—Garden Marigold.

Calendula has been used in cases characterized by feeble capillary circulation with some advantage. It has also been employed in congestion of the liver with beneficial results, and in jaundice it is said to have been found useful. It is not an energetic internal remedy.

Calendula, largely diluted with water, is highly esteemed by many physicians as a dressing for lacerated wounds, ulcers and burns. Burns are dressed by applying muslin cloth saturated with dilute calendula night and morning. The cloth should be

kept constantly saturated with the agent. It is also used as an injection in vaginal and uterine leucorrhea.

Calendula officinalis is stimulant, diaphoretic, antispasmodic, sudorific and emmenagogue.

Indications.—Enfeebled condition of the capillary blood vessels; varicose veins. Locally: Lacerated wounds; ulcers; leucorrhea; burns.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 60 drops.

Usual Prescription.—℞ Calendula, ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Camphoræ—Camphor.

Camphor is deemed a useful medicament in various spasmodic and hysteric affections, and in spermatorrhea it is employed with advantage. It is also used with good results in flatulent colic.

Camphor in small doses is stimulant (especially to the brain and spinal cord), expectorant, diaphoretic, sedative, anodyne, antispasmodic and anthelmintic. In large doses it is a narcotic irritant.

Indications.—Depression of the nervous and vascular systems; cold and clammy state of the surface; low muttering delirium; irregular muscular contraction; collapse, occurring in the course of acute fevers; narcosis from opium, alcohol or belladonna poisoning; chordee in gonorrhea. Externally: Sluggish granulations, local swellings, bruises and sprains, when accompanied by inflammation.

Dose.—1 to 20 grains; emulsion, 1 to 8 drachms; compound mixture, 1 to 4 drachms; spirits, 5 to 60 drops; tincture, 1 to 10 drops; oil, 2 to 3 drops.

Usual Dose.—1 to 5 grains, in pill, powder, solution or emulsion.

Camphoræ Monobromatæ—Monobromated Camphor.

Monobromated camphor is deemed a most efficient remedy in chorea and hysteria, and in delirium tremens it exerts a promptly quieting influence. In irritable conditions of the genito-urinary organs it is employed with most excellent results, and in paralysis agitans it is said to exercise a restraining power.

Monobromated camphor is sedative, antispasmodic and a cardiac stimulant when used in small doses.

Indications.—Convulsions of teething children; hysterical convulsions; cold extremities; neuroses and neuralgia, especially when associated with irritable conditions of the genito-urinary organs; palpitation of the heart; sexual irritation; diseases showing mental excitation; difficult breathing caused by asthma and cardiac diseases; spasm of the glottis; nymphomania; satyriasis; spermatorrhea; and chordee.

Dose.—1 to 5 grains.

Usual Dose.—1 to 4 grains in pills or powder every hour until the desired effect is obtained. The amount used should not exceed thirty grains in twenty-four hours.

Cannabis Indica—Indian Hemp.

The soothing influence of cannabis indica is of great value in the treatment of many nervous wrongs. In the delirium which is sometimes associated with fevers it is a very useful remedy, and in convulsions, as well as in irritable reflexes generally, its action is gratifying. In the treatment of sciatica a place for the exhibition of cannabis indica is often seen, and in rheumatism its influence is often decidedly relieving.

Cannabis indica has been extensively employed in gastralgia and usually with the most satisfactory results. In the distress of diarrhea due to indigestion it exercises an influence which is prompt and satisfactory, and in whooping cough, as well as in other convulsive coughs, its action is modifying in character.

In the diseases of women, when hyperesthesia of the genitals is a marked feature, cannabis is especially indicated. Hysteria, dysmenorrhea and uterine hemorrhage, when caused by neurotic excitement, are controlled by this agent. It is also a good remedy in cystitis and in gonorrhea.

"In small doses it is stimulant to the cerebro-spinal centers; in large doses it produces intoxication, and finally arrest of function. It exerts an influence upon the urinary and reproductive apparatus that may be rendered available in practice, and also to some extent upon the skin.

"I have employed the cannabis *specially* to relieve irritation of the kidneys, bladder and urethra. It will be found beneficial in vesical and urethral irritation, and is an excellent remedy in the treatment of gonorrhea." (Scudder.)

"As a therapeutic agent, cannabis indica should be classified with opium, though it is not so powerful. Unlike opium, however, it does not suppress the secretions, or cause nausea and vomiting. It is variously classified as a narcotic, hypnotic, anodyne, antispasmodic, sedative and aphrodisiac. Medicinal doses of the drug relieve pain and nervousness, and are followed by a pleasing, refreshing sleep. Full or overdoses cause a species of drunkenness or intoxication, in which there is exhilaration, hallucination, and delirium of greater or less degree. In still greater doses these symptoms are much increased, and the condition of the patient becomes rather alarming, if not dangerous. The continued use of large doses of cannabis indica is said to be a prolific cause of insanity in eastern countries, where it is used in the form of 'hashish.' A fatal effect is rarely produced by cannabis. It is said that faradization of the respiratory muscles and the cautious use of strychnia are the best antidotes to the ill effects of the drug.

"Heedless of all general classifications, we will say that cannabis indica is *the remedy for irritation of the genito-urinary organs* and *for depressed nervous action.* With these two indications constantly before us, the intelligent prescription of cannabis becomes an easy matter. We are not so sure, however, but that the 'depressed nervous' condition should be kept in view in all cases, even those of the genito-urinary sort. Cannabis indica, then, is a remedy that may be given with great confidence in irritation of the kidneys, bladder or urethra; in strangury, dysuria and in spasm of the sphincter vesicæ. It is as fully efficient in cystitis, and in urethritis—acute, chronic or specific.

"We rely to a very great degree upon specific cannabis for the relief of the *ardor urinæ* in gonorrhea. It, with gelsemium, eryngium, rhus, apis, etc., as indicated, given internally, together with local applications, as injections, constitutes our sole reliance in the cure of gonorrhea, and the results are usually very pleasing and satisfactory. It is also very beneficial in the later stages —in gleet. In these troubles, either by its specific effect on the parts, or by its action upon or through the general nervous system, it lessens the tendency to chordee. It *always* relieves troubles attended by burning or scalding of the urine and frequent calls to micturate. It lessens excitement of the reproductive organs and dispels lascivious dreams and thoughts. It is highly recommended in Bright's disease, with a painful discharge of bloody urine; in hematuria, in impotence, and in certain cases of diabetes.

"As a stimulant to the nerve centers—that is, for its anodyne, antispasmodic, hypnotic or narcotic effects—cannabis indica is a remedy that demands a foremost place in the treatment of many diseases. It deserves a first place among remedies for hysteria, and in the treatment of hay fever and asthma. It will

relieve the pains of gout, as well as the distressing itching of eczema, senile pruritus, and of skin troubles generally. It is frequently added to cathartics to prevent griping, and combined with nux vomica it is said to be a highly valuable remedy in retinal asthenopia."

Cannabis indica is sedative, hypnotic, anodyne and antispasmodic. In large doses it is a very dangerous and a very unreliable drug. A preparation of the herb is sold in eastern countries under the name of "hashish," and used as an intoxicant. This drug must not be confused with white Indian hemp (asclepias incarnata) or apocynum cannabinum.

Indications.—Irritation of the urinary organs; frequent desire to urinate, accompanied by a burning sensation; lascivious dreams; irritation of the reproductive organs of females; spasmodic affections; chronic alcoholism.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Cannabis indica, gtt. v to xxx; water, ℥iv. M. Sig. Dose one teaspoonful every two to four hours.

Cantharis Vesicatoria—Spanish Fly.

Cantharis in very small doses exercises a stimulating influence upon the genito-urinary organs, and especially upon the mucous membranes of the bladder and urethra. In these small doses it is promptly corrective when there is burning, stinging pain, strangury or tenesmus of the bladder, but its long-continued use, even in medium doses, may produce strangury, albuminuria or hematuria.

The most dangerous effects of this drug have sometimes been produced by its administration in large doses for the purpose of producing an aphrodisiac result. No less than poisonous doses can possibly produce sexual excitement.

Cantharis externally causes redness, vesication, suppuration, or sloughing, according to the length of time it is allowed to remain in contact with the skin. In the form of the ordinary emplastrum cantharides, or "fly blister," it is sometimes of value as a counter-irritant.

"Cantharis is a remedy of no small value for irritability of the bladder. It has few superiors, if any, for incontinence of

urine due to debility and relaxation or partial paralysis of the sphincter vesicæ, and especially in that incontinence so often seen in women, who, because of weakness of the bladder, are unable to retain the urine when they cough or sneeze or laugh. Here cantharis is an excellent remedy.

"Cantharides is highly recommended in some cases of seminal emissions. We can imagine the case in which it will do well. It is of a "below-par" condition of tissues about the base of the bladder, prostate and urethra. It is a remedy for the same conditions that may be seen in obstinate cases of gleet, prostatorrhea, spermatorrhea, chordee, and in diabetes insipidus. Cantharides is *the* remedy in chronic nephritis and pyelitis. It has no superior in the relief of that tearing tenesmus that is so wearing and worrisome in cystitis.

"Cantharides exerts a beneficial effect upon the uterus and its appendages. It is a uterine stimulant, and as such it acts as a direct emmenagogue in some cases of amenorrhea, uterine leucorrhea, metritis, and even in mania depending upon a wrong of these organs. It is very effective for good when given in chronic ovaritis, when there is a burning sensation and pain, worse at the menstrual period. It is a remedy when menstruation is too scanty, or too profuse, or too early, or the discharge is too dark, and especially when the breasts are very sore and sensitive.

"Cantharides is highly recommended in the proper dose as a remedy for *scaly* skin diseases, like psoriasis, eczema, prurigo, lichen, tinea tonsurans, tinea circinnata, and in alopecia, especially when the patient is depressed, needs stimulating, etc.

"The dose of specific cantharides, as given in some of the works on therapeutics and in the dose books—from three to ten drops in water—is too large. Ten-drop doses, frequently repeated might produce trouble. From the fraction of a drop to five drops, well diluted, is ample. Cantharides should not be given when there is active inflammation or congestion of the kidneys.

"As a local irritant, cantharides stands alone. It or some of its preparations occupy the whole field. In this line we use the cantharidal collodion upon rubber adhesive plaster, dropping the fluid in drops from one-half inch to one inch apart, over the adhesive surface of the plaster to the size of the place we desire to blister, being careful that no collodion comes to the edge of the plaster. Then the plaster is snugly pressed to the body. In a few hours the blister is drawn, and a puncture can be made through the plaster to allow the escape of the serum. But care is taken not to disturb the plaster. It remains *in situ* until the raw surface has completely healed. There is, in this way, no open sore and no dressing. It is satisfactory to both physician and patient. A blister thus formed is used frequently as a coun-

ter-irritant in otitis media, over the mastoid process; for gastric pain and vomiting; for periostitis, peritonitis, and synovitis; for splenitis, myelitis, or in meningitis; for neuralgia, sciatica, and in hydrothorax, pericarditis, pleuritis, the second or third stages of pneumonia, etc. Cantharides forms a part of many local applications to the head and scalp, with the idea that it stimulates the growth and health of hair cells. It is recommended highly as a local application in alopecia. In this instance it does not excel, if it equals, sulphur." (Bloyer.)

Cantharis is diuretic, emmenagogue and stimulant. In large doses its use is frequently attended by violent inflammations of the alimentary canal and genito-urinary organs, and other dangerous conditions. As small a quantity as six grains of the powdered drug has caused death.

Indications.—Atony of urinary apparatus, especially the bladder; burning, stinging pain, strangury and tenesmus of the neck of the bladder; dysentery, when there is a discharge of mucus streaked with blood, looking like scrapings of the intestines; intense sexual desire; gonorrhea, when the discharge is purulent and bloody; menses too dark, too early and too profuse.

Dose.—Fluid extract, 1 to 3 drops; specific medicine, ¼ to 3 drops.

Usual Prescription.—℞ Cantharis, ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every hour to every three hours.

Capsella Bursa Pastoris—Shepherd's Purse.

This remedy has been employed with a good degree of success in chronic menorrhagia where the menstrual discharge occurs too frequently or continues too long, or when the discharge is almost constant but colorless. There is in such cases usually a frequent desire to pass urine, and often a deposit of phosphates. It has also proven a remedy in some forms of dyspepsia and in chronic diarrhea.

Capsella bursa pastoris is diuretic, astringent and stimulant.

Indications.—Atony of the vascular system of the pelvic viscera; chronic menorrhagia when the menstrual discharge occurs too frequently or continues too long, or when the discharge is almost constant, but colorless; uterine hemorrhage with uterine colic; frequent desire to pass urine; deposit of phosphates; hemorrhage from miscarriage, hemorrhoids, diarrhea and dysentery; hematuria.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—10 to 15 drops every two or three hours.

Capsicum Annum—Cayenne Pepper.

Capsicum is much used as a local stimulant and irritant. The following constitutes a good application in muscular rheumatism: Add an even teaspoonful of powdered capsicum to one-half pint of cider brandy and one-half pint of water, and steep the mixture over gentle heat for one hour. Then allow it to cool, and carefully pour off the liquid, which may be applied hot four or five times a day.

"Capsicum is a powerful topical stimulant, but its general influence is feeble. As capsicum it never gains admission to the circulation, and in the process of digestion it almost wholly loses its properties as a remedy.

"Capsicum is used as a topical stimulant to the skin, and with advantage where the circulation is feeble and there is need of such stimulation. It also exerts the revulsive influence of other rubefacients.

"Its influence when taken into the stomach is of the same character. It excites the nerves, and calls an increased flow of blood to the part. In torpid states of the gastric mucous membrane such action may be very desirable, may even be essential to life, as in congestive intermittent. It is the topical action upon the gastric mucous membrane that is beneficial in some cases of delirium tremens.

"The solar plexus, the most important of the vegetative nerve centers, may be thus influenced from the stomach. The stimulant influence of capsicum may, therefore, be extended through this, and be of marked advantage in states of great and sudden prostration with a tendency to congestion." (Scudder.)

Indications.—Sudden prostration, with tendency to congestion; atonic dyspepsia, especially that of drunkards; delirium tremens; pains in the region of the kidneys, indicating sluggish capillary circulation.

Dose.—Fluid extract, 1 to 3 drops; tincture, 15 to 30 drops.

Usual Dose.—1 to 2 drops.

Carbo-Vegetabilis—Charcoal.

This agent constitutes one of our most important remedial resources in the hemorrhages which are frequently encountered

in pernicious anemia, purpura, typhoid fever and putrescent conditions, as well as in atonic conditions of the uterus. In hypersecretion of gastric juice, with hyperacidity and flatulence, it is also a remedy of corrective power, and in diarrhea with profuse brown, slimy discharge, accompanied by great tenesmus, it exerts a curative influence. In "water-brash," or where there is decomposition of food, it is a useful remedy.

In topical disease, with profuse secretion and a tendency to sepsis, its local application absorbs the one and checks the other.

"The *specific* use of charcoal is to arrest hemorrage from the bowels. It has been used in enema, ℥ss. to ℥i, finely powdered, to four ounces of water, thrown up the rectum. Why this checks it I cannot tell; that it does it, I have the evidence of my own eyes.

"For several years I have employed the second decimal trituration as a remedy in passive hemorrhage, with most marked benefit. I employ it in threatened hemorrhage during typhoid fever, in menorrhagia, especially when chronic, in prolonged menstruation, the watery discharge that sometimes follows menstruation, hemorrhage from the kidneys, hemorrhage from the lungs, and in some cases of leukocythemia.

"A good indication for this remedy is a small pallid tongue, with lenticular spots, and with this it may be given in any form of disease.

"The dose of the first or second trituration will be one grain, repeated as often as necessary." (Scudder.)

"The keynote to its use is pallor and debility, and it is indicated by hemorrhage or a profuse secretion in any of the fluids of the body. In the carbo-vegetabilis case the tongue is full and expressionless, the pulse is small and feeble, the skin is relaxed, the abdomen is tumid and doughy. Every feature of the body seems to have asthenia written boldly upon it.

"Carbo-vegetabilis, the second decimal trituration, in from one- to two-grain doses, has been used for years with very great assurance in cases of the hemorrhagic diathesis. Just how or why it checks hemorrhage, we do not pretend to know or say, any more than we pretend to know or say why or how many other, or any other, remedies act. But we know that it does it. Thousands of other physicians know the same thing from actual experience. We have seen cases of the most violent, persistent nose bleed checked quickly by the administration of carbo-vegetabilis. Occasionally it fails. The reason for failure is because the indications, or conditions calling for it as a remedy, are not present."

"Have had several cases of persistent nose bleed in which I

tried a remedy that gave good results in all that it was tried on. The drug is carbo-veg. 1x in five-grain doses. One case in which I used this was a case of vicarious menstruation in a lady aged thirty-five, who had chronic albuminuria. Plugging the nares did no good, and as a last resort I turned to my case and found the ergot bottle was empty, but the bottle of carbo-veg. was full. Remembering the advice received in college about passive uterine hemorrhage, and that use of this drug, I thought I would try it. It was given without any confidence in its beneficial effects, however. In fifteen minutes the dose was repeated. After five or ten minutes the bleeding diminished, and soon stopped altogether. The following month I was called again, and tried plugging with no good results. When the carbo was resorted to again, the bleeding ceased. The third time I used the drug alone, and for two or three months afterward used nothing else, and no other treatment was necessary.

"A second case in which I had good results was a little girl who was subject to nose bleed. When I called she had been bleeding for nearly two hours and was very weak. The point from which the oozing came was about the size of a silver dime, and it was almost impossible to wipe the blood away fast enough to see whether any other points were visible. I plugged the nostril and gave carbo-veg. I left several powders, with directions to give one every two hours and to bring the girl to the office the next day. On examination the next day, I found that all the discharge had proceeded from the one point. Gave a dozen more of the powders, with directions to give four a day. From that time to the present, over two years, there has been no more complaint of nose bleed.

"I have used this in probably a dozen cases of passive hemorrhage of the nose, and in every case have had good success. Whether the cases were simply coincidences or not, I am not prepared to say, but shall give the drug a more extended trial."

Charcoal is disinfectant, hemostatic and absorbent.

Indications.—Profuse menses; salty taste in the mouth, with profuse watery secretion and nausea; sour or putrid eructations; passive hemorrhage from the uterus, stomach or bowels; hemorrhage from the bowels in typhoid fever; pallid, expressionless tongue; tongue having a coating which lifts in patches, and shows tendency to hemorrhage; leucorrhea when associated with passive hemorrhage, the flow prolonged and recurring too frequently; pallid, transparent skin; acidity of the stomach; offensive breath.

Dose.—2 to 30 grains; specific carbo-veg. (ix trit.), 1 to 60 grains.

Usual Dose.—2 to 10 grains of a trituration consisting of one part charcoal to nine parts sugar of milk. Pure charcoal is best administered in tablet form. In some cases the third trituration will constitute a remedy of sufficient strength.

Carum Copticum—Bishop's Weed.

This drug has been recommended for alcoholism, and it is claimed that many persons have been rescued by it from the habit of liquor drinking.

Carum copticum is stimulant, carminative and antiseptic.

Indications.—Alcoholism; a sensation of gnawing or sinking in the pit of the stomach; discharges of a chronic character; bronchitis when there is copious expectoration.

Dose.—Fluid extract, 10 to 30 drops.

Usual Dose.—10 to 15 drops.

Cascara Amarga—Honduras Bark.

Honduras bark has not been sufficiently studied by our physicians to enable us to definitely state the indications calling for its exhibition. Practitioners of the older school of medicine, however, who have had a considerable experience in its use, claim that it is of great value in the treatment of the various forms and results of syphilis. It is supposed to cure this disease by eliminating the specific element from the blood by way of the skin and kidneys.

Honduras bark has been highly recommended in rheumatism, especially when of gonorrheal origin. Evidently this agent is worthy of further study along the lines here suggested.

Cascara amarga is alterative, tonic, diuretic and antiseptic.

Indications.—Syphilis; chronic syphilitic eruption; syphilitic tubercles; chronic eczema and gummy tumors; chronic nephritis; chronic nasal catarrh; rheumatism, especially when of gonorrheal origin.

Dose.—Fluid extract (not miscible with water), 30 to 60 drops; powdered extract, 5 to 10 grains.

Castanea Vesca—Chestnut.

Chestnut leaves exert a specific influence in some cases of whooping-cough, so much so that the relief is apparent in twenty-

four hours. They have usually been employed in infusion, but the tincture will be found as good, and is more easily dispensed. In convulsive cough or paroxysmal cough, resembling whooping-cough, it has also proven a successful remedy. It may also be tried in cases where there is unsteadiness in the gait and a disposition to turn to one side.

Castanea vesca is tonic and astringent.

Indications.—Spasmodic coughs; paroxysm of whooping-cough; catarrhal conditions.

Dose.—Fluid extract, 5 to 60 drops.

Usual Dose.—10 to 15 drops.

Catalpa Bignonioides—Catalpa.

In small doses catalpa relieves irritation of the bronchial tubes, and gives freedom to respiration. It has been used in asthma with marked success, and is also recommended in chronic bronchitis, and in some forms of functional heart disease.

Catalpa bignonioides is alterative, antispasmodic, anthelmintic and anodyne.

Indications.—Irritation of bronchial tubes; asthma and chronic bronchitis; difficult respiration; functional diseases of the heart.

Dose.—Fluid extract, 1 to 20 drops; specific medicine, ½ to 20 drops.

Usual Dose.—1 to 3 drops.

Caulophyllum Thalictroides—Blue Cohosh.

Caulophyllum stimulates uterine contractions before delivery, and lessens after-pains. As a measure preparatory to confinement, this agent, when used for two or three weeks previous to labor, is of much service to the child-bearing woman. It so acts upon that part of the nervous system which controls the uterus and pelvic region that there is perfect co-ordination of muscular powers or contractions. Through this kindly action caulophyllum becomes an efficient remedy for atonic or irritable false pains, and relieves or cures many manifestations of uterine irritation.

Caulophyllum is a direct emmenagogue, acting specifically upon the muscular structures or mucous membrane of the uterus, and not indirectly as a tonic. It promptly relieves chronic uterine diseases accompanied by irritation, and in many cases of leucor-

rhea in the adult, as well as in the atonic leucorrhea of children, it constitutes a remedy which is often useful. In dysmenorrhea and in amenorrhea it can be employed with assurance of favorable results. As a remedy for the prevention of abortion it has no superior, and as a medicament for the treatment needed after abortion has occurred it is highly valued. It is also employed with advantage in chorea that is due to menstrual wrongs, and in subinvolution it is used with good results.

"Caulophyllum is an excellent remedy for that insomnia which is so common and many times so instractable in so-called nervous women. Many of these people have disturbing bladder troubles, urethritis, nephritis, and even albuminuria, that are greatly benefited, if not radically cured, by caulophyllum.

"Epilepsy due to menstrual or ovarian wrongs, and ovarian diseases of sundry kinds, acute and chronic, yield rapidly, many times, to the administration of specific caulophyllum. It has been highly recommended for rheumatic and muscular pain, especially when occurring in pregnant women, or in the extremities, as in the fingers and toes. Caulophyllum has been commendably praised as a remedy in certain cases of bronchitis, pneumonia, whooping-cough, etc. In these troubles its curative effect is exerted especially through its kindly action upon the nervous system. It receives its meed of praise as a remedy in orchitis, especially if it be of rheumatic origin. It is here a rival of pulsatilla and of phytolacca.

"Caulophyllum has no superior as a so-called tonic in those cases of general debility so frequently found in women who are broken down physically, and especially sexually, and who complain always of pain, heaviness, and weakness in the lower extremities. In some way or other, caulophyllum gives them new life."

"Caulophyllum exerts a very decided influence upon the parturient uterus, stimulating normal contraction, both before and after delivery. Its first use, in this case, is to relieve false pains; its second, to effect co-ordination of the muscular contractions; and third, to increase the power of these. The first and second are the most marked, yet the third is quite certain. Still if any one expects the marked influence of ergot, in violent and continued contractions, he will be disappointed.

"I judge that it exerts its influence through the hypogastric plexus; though to some extent it influences every process controlled by the sympathetic. Acting in this way it influences the circulation, nutrition and functions of the reproductive organs. I have employed it in chronic uterine disease with advantage, especially where there is irritation, and uneasiness.

"It may be used with good effect in some cases of nervous disease, especially in that condition known as *asthenic plethora.*" (Scudder.)

Caulophyllum thalictroides is antispasmodic, tonic, alterative, diaphoretic, diuretic, emmenagogue, parturifacient and anthelmintic.

Indications.—Uterine irritation; as a parturient, to relieve false pains; spasmodic after-pains; chronic uterine diseases; hysteria; dysmenorrhea; amenorrhea; rheumatism in the small joints of the hands and feet; shifting pains in the limbs.

Dose.—Fluid extract, 1 to 30 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Caulophyllum, gtt. x to ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

An aromatized liquid, containing the emmenagogue principle of caulophyllum root, and known as Leontin, is extensively employed in amenorrhea and dysmenorrhea. It is especially valuable in the amenorrhea of young girls.

Indications.—Amenorrhea and dysmenorrhea, especially when due to congestion, as from exposure to cold; amenorrhea of young girls.

Dose.—From 5 to 10 drops in water every hour, to 60 drops four times a day. The latter dose is not often necessary.

Usual Prescription.—℞ Leontin, ℥iii; water, ℥iv. M. Sig. Dose one teaspoonful every two hours. At bedtime three teaspoonfuls may be taken.

Cerii Oxalas—Oxalate of Cerium.

This agent has been used with some success in the vomiting of pregnancy, and in some abnormal conditions of the uterus its exhibition has proved beneficial. In chronic wasting diseases accompanied by gastric irritation it has been employed with advantage, and in emesis of dyspepsia when due to gastric acidity it is deemed a remedy of merit. It has also been used in seasickness with some success.

The oxalate of cerium does not derange digestion, and is therefore of value as a means of checking the cough of phthisis and bronchitis, especially when accompanied by vomiting. In combination with subnitrate of bismuth it is often used in the treatment of diarrhea.

The oxalate of cerium is sedative, astringent and antispasmodic.

Indications.—Nausea and vomiting; vomiting of pregnancy; cardialgia; seasickness; whooping cough.

Dose.—½ to 5 grains.

Usual Dose.—½ to 2 grains.

Chelidonium Majus—Great Celandine.

Chelidonium is one of our most efficient remedies in chronic diseases of the liver. In acute or subacute inflammation of the liver it is an efficient remedial agent, and in jaundice due to a catarrhal condition or swelling of the bile ducts it constitutes a medicament of curative power. In dropsy resulting from hepatic affections chelidonium has often proved useful, and in splenic enlargement it exercises a reducing influence which has often proved valuable.

Some writers of large experience in the use of chelidonium believe that it exerts a decided action on the pancreas, relieving it of any existing congestion or enlargement by giving it better circulation, and lessening irritation of the ducts.

"The cases in which chelidonium has seemed to me to exert the greatest influence, presented the following symptoms: The tongue much enlarged, and somewhat pale; mucous membranes full and enfeebled; skin full and sallow, sometimes greenish; fullness in hypochondria; tumid abdomen; light colored feces; no abdominal pain; urine pale but cloudy, and of high specific gravity.

"I have seen cases of chronic disease presenting the symptoms, with the addition of edema of the feet and legs, in two of which the influence of the chelidonium was seemingly direct and curative. In one, it is associated with other means, and a sufficient time has not yet elapsed to determine the success, yet thus far it is beneficial. In one case of enlarged spleen, with confirmed dyspepsia, the influence was marked from the first, and in three weeks the patient concluded to dispense with medicine, and let nature complete the cure (because nature makes no charge for medicine.)" (Scudder.)

"Its peculiar and particular strength or forte lies in its positive action upon the liver and gastro-intestinal tract. The indications that call for the administration of chelidonium are very much like those ascribed to podophyllin; in fact, they are so much alike that we have frequently substituted one remedy for the other.

But we do not believe they are exactly alike in their action. In large doses both are harsh remedies. In medicinal doses podophyllin acts better than chelidonium in the case in which there is fullness with evidence of accumulations in the intestinal tract. Chelidonium acts better than podophyllin in cases where there is fullness and sogginess of tissues, due to an inactivity or stagnation—a cessation of function and evidences of feebleness. The podophyllin case should show strength.

"In the chelidonium case the tongue and mucous membranes are full, pale, sallow, soggy. The tongue may have a dull, leaden-colored fur upon its surface; the skin is pale, dull, leaden, sallow, even greenish; there are full hypochondriac regions, especially the right; the abdomen is tumid; the feces are light-colored, and sometimes frothy, occasionally scybalous; the urine is pale and cloudy, and usually of high specific gravity; sometimes it is offensive in odor. The chelidonium patient is apathetic, heavy, lethargic, indolent; he complains of a bitter taste in the mouth, of prostration; he is inclined to lie down, is sleepy, and describes a numbness or tingling in the back, or through the shoulders and hepatic region. His pains are ascribed to the liver; they are dull, heavy, tensive, tearing; occasionally they are located under the right scapula, or near the dorsal spines. The chelidonium patient frequently has bilious headache, liver cough, etc." (Bloyer.)

"Its most important uses are as a remedy influencing those parts which are supplied with nerve force from the branches of the solar plexus, and with blood from the hepatic artery, and to some extent from the splenic artery. It is especially useful in diseases of the liver, such as acute and subacute inflammation, biliary catarrh, jaundice due to obstruction of the bile ducts, and biliary calculi.

"Perhaps the strongest claim which has been put forward for chelidonium is in the treatment of biliary calculi, for which purpose it has been used for many years with eminent success by a large number of physicians of all schools. By many of these it is considered superior to any other remedy for this purpose. A physician of my acquaintance uses a specific tincture in doses of 15 minims, combined with variable proportions of chionanthus and dioscorea, and considers the combination superior to anything except surgical measures, and an excellent auxiliary thereto." (French.)

Chelidonium majus is diuretic, alterative, diaphoretic, stimulant and cathartic.

Indications.—Skin pale and sallow; full, pale and sallow tongue and mucous membranes; greenish-yellow skin; pain under right shoulder-blade; bloating in the region of the liver,

with pain on pressure; stools slimy and light-colored or scybalous; hepatic congestion; jaundice due to swollen bile ducts; sluggish hepatic action; cough, with hepatic pain; fullness, with tensive or throbbing pain in the right hypochondrium, and pain extending to the right shoulder; melancholia, headaches and gastric wrongs dependent upon faulty action of the liver.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1-10 to 10 drops.

Usual Dose.—1 to 5 drops.

Chelone Glabra—Balmony.

Chelone has been employed with decided benefit in the various hepatic affections. It is said to stimulate the secretive power of the liver, and at the same time give tone and regularity of action. In jaundice it has long been regarded as one of our most useful remedial agents. In dyspepsia associated with an inactive condition of the liver it is a remedy of value, and in the convalescing stages of fevers and other acute diseases it has rendered excellent service.

Chelone is especially useful in dysentery after the inflammatory symptoms have been removed. It is also deemed an efficient medicament in cases where the system has been depleted by hemorrhages or colliquative discharges.

Chelone glabra is tonic, anthelmintic and laxative.

Indications.—Gastro-intestinal debility; torpidity of the bowels; atonic state of the digestive organs; chronic diseases attended with debility; jaundice, with loss of appetite; debility of the nervous system from excessive use of quinine.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Chelone glabra, ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Chimaphilla Umbellata—Pipsissewa.

In renal and vesical affections, especially when the urine is scanty and loaded with a muco-purulent sediment, chimaphilla is deemed a remedy of some value. Its kindly action in catarrhal states of the bladder has caused it to become a favorite remedy in chronic diseases characterized by a discharge of mucus, pus or blood from that organ. It is not a suitable medicament for

acute or inflammatory wrongs, but is especially adapted to chronic and lingering affections which give rise to discharges of mucus or muco-pus. It has also been successfully employed as a part of the treatment of patients suffering from dribbling of urine or incontinence of urine in any form.

"The chimaphilla has been principally employed as a tonic diuretic, influencing the urinary apparatus in a similar manner to the buchu and uva-ursi, though I think it preferable to either. It relieves irritation of the entire urinary tract, and improves the circulation and nutrition of these organs.

"It also influences the processes of waste and nutrition, and possesses the properties termed alterative. In this respect it has not been thoroughly studied though highly spoken of by some in the treatment of scrofula and secondary syphilis." (Scudder.)

Chimaphilla umbellata is alterative, tonic, diuretic and astringent.

Indications.—Chronic vesical and renal affections, with muco-purulent sediment; smarting pain and frequent urination.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—10 to 30 drops every two to four hours.

Chionanthus Virginica—Fringe Tree.

Chionanthus exerts a specific influence upon the liver, and to a greater or less extent upon all the organs engaged in digestion and blood making. In functional liver difficulties caused by some wrong of the mucous surfaces of its ducts it always acts in a curative direction, and in jaundice when not caused by structural disease of the liver it has few if any equals, with the possible exception of kali muriaticum. As a remedy for the prevention of the formation of gall stones it is of undoubted benefit, and it is also useful as a means of aiding in their expulsion. In acute dyspepsia it is used with good results, and in both acute and chronic hepatitis it is deemed a medicament of decided merit. It is not, however, an indicated remedy in the jaundice of inflammation of the liver. In the wrongs of the irritable liver it often exercises a soothing influence.

Chionanthus is an excellent remedy in bilious colic, and it has often been used with advantage in bilious, remittent and intermittent fevers. It is also said to relieve cases of hyper-

trophic liver due to obstruction of the ducts and of a malarial origin.

"It is one of the surest remedies I have ever employed, whether the case is one of jaundice, formation and passage of gall stones, bilious colic (yellowness of skin), acute dyspepsia, acute or chronic inflammation of liver, or the irritable liver of the dipsomaniac." (Scudder.)

"It has always proved a specific for jaundice in my hands, and a valuable remedy in hypertrophy and congestion of the liver. It does not seem to act as forcibly upon the secretory function of the liver as some articles of its class, but in all abnormal conditions it seems to have the power to bring back the liver to its normal state. It has a specific influence over that organ in its diseased state, let that morbid condition be what it may. It is not cathartic in its action, but acts more as a tonic to the bowels, liver and stomach, and I think influences the spleen and whole glandular apparatus. In very large doses it has produced ptyalism, which soon passes off after the medicine is discontinued. It not only acts well on the liver, stomach and glandular system, but seems to have a curative effect on some female affections. It is very favorably spoken of by some physicians in congestion and chronic catarrh of the uterus." (Goss.)

"For fifteen or more years I have used chionanthus for that class of troubles for which podophyllin and calomel compounds are usually prescribed—non-inflammatory liver troubles. I consider it a tonic cholagogue and stomachic indicated in all cases of perverted action of the entire digestive organs. More particularly the liver, especially when the disturbance is caused by over-indulgence, or where there is a history of previous malarial trouble; also in recurrent bilious attacks." (Boskowitz.)

"I regard chionanthus as one of the most meritorious remedies in our materia medica. In that insidious and intractable malady, jaundice, chionanthus is the mainstay, and will not disappoint when properly administered. Unlike podophyllin, it can be given in good-sized doses and continued for an indefinite period unaccompanied by any unpleasant results. It does not produce nausea, nor does it cause a temporary paresis of the bowels, as is a common sequence of some other cholagogue remedies. It has been declared by some authorities, to be slightly narcotic when taken for some length of time, but in a constant use of the remedy for several years, I have yet to discover any such property. In those cases of chronic jaundice, due to catarrhal affection of the bile duct, chionanthus is to be depended upon; and while its use is depreciated as being slow, I regard that property as one of great importance. Too often we are tempted to produce sudden and violent stimulation of the

liver by more active remedies, whose action is followed by partial suspension of the functions of that organ, the last state of the patient being worse than the first. In these cases iris or podophyllin may be used as adjunct or co-operative remedies in the commencement of the treatment, but their long-continued use is to be condemned. Chionanthus forms a valuable addition to the armamentarium of the obstetrician. Jaundice, that annoying and obstinate trouble of the pregnant woman, disappears before the kindly action of the fringe tree when it is given in five-drop doses three or four times a day. Infantile jaundice, which so often presents itself and demands prompt attention, is soon overcome by this gentle yet effective remedy. I usually employ it in such cases, triturated with sugar of milk." (Duvall.)

Chionanthus virginica is alterative, diuretic and laxative. In very lage doses it is slightly narcotic.

Indications.—Skin resembling copper in color, but shading a little more on green; pain in the epigastrium and right hypochondrium; yellowish or greenish discoloration of the eyes. It it also indicated by a dirty sallow skin, with expressionless eyes, and hepatic tenderness, the passage of light grayish stools, and scant urine, which stains the clothing yellow. The liver-pain of chionanthus may range from a slight uneasiness, with a feeling of weight and fullness, to an intense pain converging from the gall-bladder to the umbilicus, and attended with nausea, vomiting and marked prostration.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 20 drops.

Usual Dose.—5 to 10 drops.

Chloralum Hydratum—Hydrated Chloral.

Chloral hydrate is a valuable remedy in many conditions, but it should never be used when the action of the heart is feeble. It is an essential remedy in puerperal convulsions. In delirium tremens it is among the leading hypnotics. Chloral is extensively used in insomnia, but it is unwise to employ this, or any other drug, for the purpose of producing sleep, when not absolutely necessary. Sleeping doses except for temporary use, are very harmful. Twenty grains of the drug to an ounce of water makes an efficient application in indolent ulcers and foul-smelling wounds. Triturated with sugar, equal parts, it constitutes a good pain-relieving application in neuralgia. It may be given by

enema, in the same dose as by the mouth, adding the required dose to one-half glass of water.

Chloral hydrate is sedative and hypnotic. In large doses it is a dangerous drug. The long continued use of it causes, besides many other dangerous conditions, a gradual loss of physical and mental power.

Indications.—Convulsions; severe after-pains; tetanus, when not contraindicated by a weak heart; acute mania, when the heart's action is good. Locally: Ulcers and foul-smelling wounds; neuralgia.

Dose.—5 to 20 grains.

Usual Dose.—1 grain for each year of age up to twenty. It may be administered in peppermint water or some syrup.

Chloroformum—Chloroform.

In chronic vomiting from nervous causes, as in pregnancy, chloroform has been used with a fair degree of success. In irritative coughs five drops may be added to four ounces of water, and a teaspoonful given every five or ten minutes during the paroxysms of coughing. During the intervals a teaspoonful should be given every hour or two. The most important mode of using chloroform is by inhalation, and by this method it is used under a variety of circumstances to produce loss of consciousness, general relaxation and loss of sensibility. In puerperal and hysterical convulsions it is the most certain remedy known.

In my obstetrical practice I have used this agent freely for many years, and have never known any evil effects to result from its exhibition. My manner of using the anesthetic is as follows: Fold a napkin or towel in such a way as to form a cup-shaped cavity, and at the bottom of the cavity place a piece of cloth folded to fit; then pour into the cavity about one-half drachm of chloroform, and allow the lady to take the napkin in her hand and inhale the vapor freely. As soon as she has inhaled enough of the anesthetic to modify the pangs of labor and produce relaxation of the muscular system her hand will drop away from her mouth and nose, and in this way apply the safety-valve; for up to this stage of anesthesia chloroform is quite free from danger.

Chloroform should never be administered by gaslight, unless the latter be protected by a closed gas case, and provision made for the rapid escape from the room of all decomposition products. Its vapor in contact with an exposed gaslight evolves chlorine vapors which are dangerous to the patient.

Chloroform internally is sedative, antispasmodic, anesthetic and stimulant. In overdoses it is a poison.

Indications.—Internally: Chronic vomiting from nervous causes; irritative cough. Locally: Painful conditions and spasms. By inhalation: Nearly all cases requiring speedy relaxation of the muscular system, and whenever it is desirable to produce unconsciousness or insensibility to pain.

Dose.—2 to 20 drops, internally; for inhalation, 1 drachm is used, and this should be renewed every three or four minutes until the desired effect takes place.

Usual Dose.—5 to 10 drops, internally.

Cimicifuga Racemosa—Macrotys.

Cimicifuga is a remedy of great value in the treatment of many abnormal conditions of the reproductive organs of females. The influence of the drug on these organs is toward normal functional activity. It is very useful in the afflictions incidental to pregnancy, and its continued use greatly modifies the many aches, pains and other unpleasant sensations of the child-bearing woman during gestation.

"For years I have employed macrotys as a specific in rheumatism, and with excellent success. Not that it cures every case, for it does not; neither would we expect this, for this would be prescribing a remedy for a name. Rheumatism may consist of varied pathological conditions, though in all there is the special lesion of the nervous system, which characterizes the disease. In one case we find the indications for the use of an acid prominent, and this becomes a remedy for rheumatism. In another there are symptoms showing the need of alkalies, and they prove curative.

"Macrotys influences the nervous system directly, relieves rheumatic pain when not the result of inflammation, and probably corrects the diseased condition (formation of lactic acid?) which gives origin to the local inflammatory process. Thus in the milder cases, where the disease has not localized itself as an inflammation, macrotys is very speedy and certain in action. In rheumatic fever it is also positive in its action, and with the

special sedatives gives excellent results. Where rheumatism has localized itself in an inflammatory process, all the benefit we obtain from it is that we remove the cause, and hence the reason for a long continuance of the inflammation.

"It is a remedy for all pain having a rheumatic character, and for this we prescribe it with the best results. Those cases which go under the name of rheumatic neuralgia are very speedily relieved by it. In some cases the pains of weeks' duration disappear in a single day. Whilst the continuance of the remedy will not unfrequently affect a cure in these cases, in many it will require the additional means necessary to give healthy functional activity to some organ or part especially impaired.

"The macrotys influences directly the reproductive organs. This influence seems to be wholly upon the nervous system, relieving irritation, irregular innervation, and strengthening *normal* functional activity. For this purpose it is unsurpassed by any agent of our materia medica, and is very largely used.

"Its influence is very marked in functional disease of the reproductive organs of women. Associated with pulsatilla it is specific in many cases of dysmenorrhea; it should be given for three or four days before the expected period, and continued until the flow is free. In amenorrhea it is also one of our most efficient agents. In rheumatism of the uterus, to relieve false pains, or in the many unpleasant sensations attending pregnancy, it has no equal in the materia medica, and becomes a true *partus preparator*.

"Like all other *direct* remedies, it may be employed in any case, no matter what name the disease may have in our nosological classification, if the condition of the nervous system calls for it. The heavy, tensive, aching pains are sufficiently characteristic, and need not be mistaken. So prominent is this indication for the remedy in some cases (not rheumatic), that I give it with a certainty that the entire series of morbid processes will disappear under its use.

"I had a very marked example of this in severe typho-malarial fever. In one case the disease had continued through the first week, growing worse daily under the treatment adopted, until the remarks of a night-watcher called my attention to these pains. Questioning elicited the fact that muscular pains had been severe from the first, but the patient 'thought it was part of the disease, and there was no use to complain.' The treatment was changed from veratrum and the alkaline sulphites to aconite and macrotys, and the patient was convalescing in four days; there was marked relief in twelve hours.

"This will serve as an illustration of the fact 'that a certain condition of disease may have that prominence in a case that an entire series of morbid phenomena will pass away when it is removed;' or, in other words, that a single remedy may prove

curative when a disease is complex. Removing the first in a series of morbid processes, the others disappear of themeslves." (Scudder.)

"Macrotys is a remedy of great usefulness in three departments of medicine, viz., general practice, gynecological diseases and obstetrics. The specific indications are muscular pains, soreness and aching of the muscles, pain increased on motion or contraction of the muscles; in the long muscles a bruised, tired or fatigued sensation in the belly of the same; pain not constant, but intermittent, tensive, and frequently in waves; pain affected but little by pressure or palpation; temperature increased but slightly, if at all; circulation free; skin hot, but inclined to moisture.

"It is indicated for all pains of a rheumatic character, as well as in those cases so frequently encountered which are recognized as rheumatic neuralgia. In these we may be assured of very speedy relief. It possesses no equal in the treatment of lumbago, especially if it be associated with bryonia. The intensity of the suffering readily yields. Associated with other specifically indicated remedies, it is an important factor in the treatment of a majority of the cases of la grippe, the sore and aching body and extremities being the immediate indication; likewise the same indication calls for macrotys in the early development of smallpox, and if given with the first appearance of the characteristic 'boneaches,' it will undoubtedly render the disease milder.

"In chorea, especially following an attack of rheumatism, or in a rheumatic subject, it is highly extolled, clearly evidencing its marked influence over the nervous system. Cardiac rheumatism, transient rheumatoid pains, stiff neck, eye-strain with pain, dull throbbing or aching in the prostate, in most instances yield quickly and substantially to this agent.

"In fact, at any and all times where a pathological condition exhibits symptoms corresponding to the foregoing indications, regardless of nosological classification, macrotys is the remedy—basing our judgment on specific diagnosis, pathological expression, never on names of diseases. Macrotys has a wide range of usefulness in the practice of gynecology; its influence in various menstrual disturbances and consequent neuroses is especially marked, relieving irritation, atony of the reproductive tract, irregular innervation, and strengthening normal functional activity. This is particulary true in dysmenorrhea of the neuralgic type, in which it is surpassed by no other drug. One or two days before each period the patient is nervous and irritable, pain in the region of the uterus, radiating to the tubes and ovaries, tenesmus and weight attended by lumbo-sacral pain, the suffering being gradually modified as the flow becomes established. Macrotys will likewise bring relief in some instances to the sufferer

from inflammatory dysmenorrhea; given the case with scanty flow, heavy, dragging, uneasy sensations in the fundus and subpubic regions; dull, aching pains with wave-like recurrence, despondency and evidence of hysteria, best describes the condition.

"Macrotys often serves a good purpose in amenorrhea, other remedies as they are indicated being given in conjunction. Think of macrotys in those cases of *suppressio mensium* resulting from colds or emotional causes, attended by bearing-down, expulsive effort, pain in the back, radiating to the uterus, ovaries and upper thigh; also in *emansio mensium,* where the various symptoms of menstruation (barring the flow) appear at regular intervals, the trouble not depending on so-called tardy menstruation or anemia, macrotys will prove efficient and usually act promptly, imparting tone and overcoming deficient nervous energy. In either event we may prescribe ½ to 1 drachm specific medicine macrotys to 4 ounces of water, teaspoonful doses of the dilution every three hours, anticipating the usual time for the period by three or four days, and continuing in this manner until the normal function is restored or established.

"In these, and in cases of scanty or retarded flow, as well as many that are apparently dependent on want of vitality of the uterus and adnexa, macrotys acts through the hypogastric plexus directly on the great sympathetic, stimulating increased impulses to the ovaries and tubes, and strengthening menstrual rhythm. After the same manner, good results have followed its continued administration in some cases of sterility, as well as in so-called frigidity of the female.

In our observation, no medicine equals macrotys in reflex or uterine headaches, characterized by a dull aching, sometimes quite severe, on top of the head; this is frequently present during early pregnancy, or may result as a consequence of perverted uterine function. Ovarian pains, the result of exposure to cold, neuralgia or hyperemia, as well as sensitiveness and pain along the course of the tubes attendant upon salpingitis, all yield promptly to macrotys, either singly or in combination with the specially indicated sedative. Likewise its indications are usually clearly in evidence in the various ills incident to the menopause, and if carefully followed will be found, with other means, a valuable aid in carrying the female over this critical period. Macrotys is one of the agents always included among the half-dozen remedies of the obstetric medicine case.

"No other medicine will compare with macrotys as a *partus preparator.* Given during the last six or seven weeks of gestation, it relieves many of the unpleasant features, and at the time of parturition facilitates relaxation and dilatation; strengthens the contractions, and under ordinary circumstances shortens labor. It is also equally valuable as a *partus accelerator,* and may be used, when indicated, to increase the force and frequency

of the pains. It is efficient and satisfactory in the relief of false pains, that frequently occur during the late weeks of pregnancy, to the great discomfort of the patient. After-pains are quite unusual following a labor in which macrotys has been used, since the reduction and contraction of the uterus is so uniform and complete that all secundal fragments are removed.

"In suppression of the lochia from cold, or, in fact, from any cause, specific macrotys will prove most salutary. Macrotys will be found the most excellent agent at our command to combat the various complications and annoying symptoms that frequently follow parturition and harass the lying-in patient, and it may be prescribed, when indicated, with the most positive assurance of satisfactory results, aiding an uneventful and natural puerperium as well as sustaining and favoring the process of normal involution." (Wintermute.)

Cimicifuga racemosa is diaphoretic, diuretic, antispasmodic, alteratve, tonic, stimulant and nervine.

Indications.—Muscular pains in the back, loins and thighs; sense of soreness, with dragging pains in the uterus; deep-seated muscular pains, with hot skin and sweating; ovarian pains; dull, tensive, intermittent pain, as if dependent upon a contracted state of muscular fiber; soreness of muscular tissue; slow, irregular, scanty or protracted menstruation; dysmenorrhea, when evidence of a rheumatic diathesis is shown; afflictions incidental to pregnancy; chronic muscular rheumatism; soreness of respiratory apparatus, giving a sensation of being bruised.

Dose.—Fluid extract, 1 to 30 drops; specific medicine, 1-10 to 10 drops.

Usual Prescription.—℞ Cimicifuga (macrotys), gtt. x to xx; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Cinchona Calisaya—Calisaya Bark.

Cinchona constitutes an efficient medicament in malarial and miasmatic diseases, when the tongue is moist and clean, or cleaning, and the secretions established before its administration. If the conditions are other than these, such preparatory treatment should be employed as will bring about the conditions named.

Cinchona is a valuable remedy in all debilitated states of the stomach and digestive tract, which are characterized by periodicity, and in general debility and want of appetite it acts well as a tonic. In intermittent and remittent fevers it is often a much-needed remedial agent, and in pernicious fever it is frequently

indicated. In fact, it is an excellent drug in all conditions in which there is a demand for an antiperiodic and tonic.

Cinchona calisaya is contraindicated in acute inflammatory diseases, plethora, active hemorrhages, and all vascular nervous irritations. When indicated, it is a good tonic, and in many gastric derangements it is a remedy of merit. It is used topically as a gentle stimulant and antiseptic. It should not be given with tannic acid, tincture of iodine, alkalies, or the alkaline carbonates. Its action is antagonized by these, and by mercurial, lead, zinc and copper salts.

Indications.—Periodicity; convalescence from exhausting diseases; low and typhoid conditions; prostration caused by an excessive and long-continued secretion of pus; chronic affections attended with periodicity, great feebleness or nocturnal perspiration.

Dose.—1 to 60 drops.

Usual Dose.—2 to 5 drops every two or three hours.

Cinnamomum Zeylanicum—Cinnamon.

Cinnamon possesses energetic antiseptic powers, and its stimulating and astringent properties are not inferior to those of many more frequently employed remedial agents. In atony of the digestive tract it has often been used with great advantage, and in bowel affections it has many times constituted a much-needed medicament.

Specific cinnamon (an alcoholic solution of the oil) has also been employed in hemorrhages of the uterus, stomach, bowels and urinary organs with the most gratifying results. In post-partum hemorrhage thirty drops should be administered every fifteen minutes, but the physician's efforts should not be limited to the use of drugs. In addition to this treatment, the right hand should be introduced into the uterus, and the abdomen over the organ firmly kneaded with the left hand.

"Cinnamon thus prepared exerts a direct influence upon the uterus, causing contraction of its muscular fiber and arresting hemorrhage. To a limited extent it exerts an influence on the entire circulatory system, checking hemorrhage from any part.

"It is one of the most certain remedies we have for uterine hemorrhage, either during parturition or at the menstrual period. I have used it since I commenced practice, and have never failed

to arrest post-partum hemorrhage with it, though I have had some very severe cases." (Scudder.)

"Cinnamon is a frequent ingredient of mixtures to restrain intestinal discharges, and the powder or its equivalent in infusion has long figured in the treatment of diarrhea and acute dysentery, though we do not believe it can equal in the latter condition other agents which we now use specifically. It has the advantage of preventing griping when given with purgatives, and it enters into the composition of spice poultice, a useful adjuvant in the treatment of some forms of gastro-intestinal disorders.

"Every Eclectic who has paid any attention to specific medication knows more or less concerning the value of cinnamon in hemorrhages. The type of hemorrhage most benefited is the post-partum variety, though here it has its limitations. If the uterus be empty and the hemorrhage be due to flaccidity of that organ due to lack of contraction, then it becomes an important agent. Then it strongly aids the action of ergot, and should be alternated with it. If retained secundines are the provoking cause of the bleeding, little can be expected of this or any other agent until the offenders have been removed. The cinnamon should be frequently given, preferably a tincture of the oil, though an infusion is useful, but it cannot be prepared quickly enough or be made of the desired strength. Our preference is specific cinnamon, a preparation of the oil in alcohol, in nicely balanced proportions. Oil of erigeron acts very well with specific cinnamon. Other hemorrhages of a passive type are benefited by cinnamon. Thus we have found it a very important agent in hemoptysis of limited severity. In such cases we have added it to Lloyd's ergot and furnished it to the patient to keep on hand as an emergency remedy. By having the remedy promptly at hand the patient becomes less agitated or frightened, and this contributes largely to the success of the treatment. Hemorrhages from the stomach, bowels and renal organs are often promptly checked by the timely administration of specific cinnamon.

"In the administration of medicines dispensed in water it is often important that they be made palatable by the addition of some agent. We know of no substance that is so universally liked, by children particularly, as cinnamon. It is pleasant, warming, aromatic, and, not of least importance, antiseptic. We invariably add it to the indicated medicine in bowel disorders, in common colds, and particularly in la grippe (in which it is credited with specific power even by those who have little faith in medicines), and in typhoid fever. Thus it is that we empty our cinnamon bottle as often as any in the medicine case, and find it to add materially to success in the medication and comfort of the patient." (Felter.)

Cinnamomum zeylanicum is tonic, antiseptic, stimulant, carminative and astringent.

Indications.—Post-partum hemorrhage; hemorrhage threatening or following miscarriage; diarrhea; flatulence.

Dose.—Fluid extract, 10 to 30 drops; tincture, 1 to 3 drachms; oil, 1 to 2 drops; specific medicine, 10 to 30 drops.

Citrullus Vulgaris—Watermelon.

This agent has been employed with excellent results in various wrongs of the genito-urinary organs, and it is especially useful in all conditions in which there is a scanty excretion of urine.

Citrullus vulgaris is an unirritating diuretic and demulcent.

Indications.—Retention of urine caused by cold; urinary affections; gonorrhea and strangury; gastritis and enteritis.

Dose.—Fluid extract, 30 drops to 2 drachms.

Usual Dose.—60 drops.

Colchicum Autumnale—Meadow Saffron.

Colchicum in small doses increases the secretions of the skin, liver, bowels and kidneys. It has long been used in various forms of rheumatism, and when judiciously selected it is one of our most valuable antirheumatics. In gout its eliminative influence removes from the system the morbid material upon which the disease depends. In chronic rheumatism, with effusion into the joints and pain of a tearing character, colchicum is a remedy of relieving power. It is also useful in rheumatic iritis, and in enlargement of the liver it exerts a reducing influence. In gonorrhea and dysmenorrhea, especially when these conditions are associated with a gouty diathesis, it is a very reliable drug. Small doses are to be preferred, as large doses are depressing.

"Colchicum has long been used as a remedy for rheumatism and gout; and, though probably the best of the old materia medica, it failed of giving its best results because used in poisonous doses. In acute and chronic rheumatism it should be employed in small doses, followed or alternated with the sedatives. We only obtain its anti-rheumatic influence when the pulse and temperature are reduced to nearly a normal standard." (Scudder.)

"Colchicum has a wide field of action. Wherever you have a gouty diathesis, remember this remedy, although I prefer to use sedatives when temperature is high. Yet I can reduce temperature with this drug. I like this remedy because it fills so many

indications, stimulating skin, kidneys, lungs and bowels; it increases waste, and thus acts as a true alterative. A restudy of this medicine will repay the physician. But be sure you get a good article.

"Give me a good preparation, and what can be done with it? I can use it as a diaphoretic, diuretic, laxative, cathartic and alterative. A novice using this remedy, and careless as to dose, can get up lots of irritation, and give rise to a good deal of suffering. But if the remedy is used with care, while there is often no more efficient remedy, there is certainly, in my experience, no more safe remedy." (Fearn.)

Colchicum autumnale is sedative, diuretic, diaphoretic, alterative, emetic and cathartic. In very large doses it is an acro-narcotic poison. The seed is much stronger than the root.

Indications.—Acute gouty conditions; sudden, sharp, shooting, tearing pain, or dull aching from the back to hips and down the limbs.

Dose.—Fluid extract, 1 to 3 drops; specific medicine, ¼ to 3 drops.

Usual Prescription.—℞ Colchicum, gtt. xx to ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every three hours.

Cocaine Hydrochloras—Cocaine.

Cocaine is a local anesthetic of varied usefulness when applied to mucous membranes and other absorbent surfaces. The amount applied at one time should not exceed one grain. As the effect of cocaine when applied to the skin is not marked, a 10 to 20 per cent. solution should be subcutaneously employed in cases requiring its influence over parts covered by skin. The amount of the drug used as a subcutaneous or submucous injection at one time should not exceed one-third of a grain. A 1 to 10 per cent. aqueous solution may be employed as a local anesthetic or subcutaneous injection. For use in the eye a 2 per cent. solution is of the proper strength. In making solutions of cocaine the drug may be dissolved in glycerine, and sufficient water then added to make the required strength.

When using cocaine the fact that alarming symptoms may arise from very moderate doses should be ever borne in mind, and the possibility of establishing the cocaine habit should not be overlooked. A long-continued use of this drug may destroy both physical and mental power.

Indications.—Internally: Vomiting of pregnancy; sea-sickness; depressed conditions. Locally: All conditions requiring a local anesthetic.

Dose.—¼ to 1 grain.

Usual Dose.—1-6 of a grain in solution, three times a day.

Collinsonia Canadensis—Stone Root.

In catarrhal conditions of the respiratory mucous membrane, most speedy and beneficial results are obtained from the timely exhibition of collinsonia. The cough of consumptives is greatly lessened by its use, as is also that caused by excessive use of the voice. In the chronic form of laryngitis, commonly known as minister's sore throat, it is a superior remedy when administered in medicinal doses.

The uniform and powerful action of collinsonia upon the mucous membrane of the throat is also manifested in its curative influence in follicular pharyngitis and chronic bronchitis. In these conditions the dose should be from two to five drops of the specific medicine every two to four hours.

The tonic action of this drug upon the heart is direct, decided and permanent. It is one of our most efficient remedies when the heart is debilitated from long-continued disease, and especially in protracted rheumatic troubles. It relieves the irritation of the heart, and increases its power and regularity of contraction. In mitral regurgitation it may be administered with confidence in its modifying power. In all functional wrongs of the heart its tonic influence is promptly made apparent. In doses of from two to five drops of the specific medicine it almost invariably relieves the distressing cough which frequently accompanies diseases of the heart.

Collinsonia has a specific action upon the vascular system, and the power of the capillaries is markedly increased under its influence. In passive hemorrhage, when the capillary circulation of the part is enfeebled, it exerts a speedily manifested controlling influence, and in all conditions showing a lack of tonicity of the walls of the blood-vessels it is specifically indicated. The power of increasing the tone of the circulatory system makes it an energetic remedial agent in many cases of dropsy. The dose employed in these conditions should be ten drops of the specific medicine every two or three hours.

In atonic states of the stomach collinsonia constitutes a medicament which gives most satisfactory results, and is especially indicated in catarrhal gastritis when the circulation is defective. In bowel affections it soothes and heals and gives tone to the intestinal mucous surfaces. It is, therefore, an agent of much value in many cases of diarrhea and dysentery.

The hemorrhoids of pregnant women, caused by imperfect venous circulation of the pelvic viscera, are also subject to its control, and the unpleasant condition which gives a sense of constriction, weight and heat in the rectum, from which many child-bearing women suffer severely, yields with reasonable promptness to its soothing influence. Most pains in the rectum, when not caused by organic change, come within its healing properties. In all rectal diseases the small dose gives the best results.

Collinsonia exerts a tonic action upon the entire urinary tract, and in most diseases of the kidneys and bladder its curative power is quickly manifested. Under its influence the secretion from the kidneys is considerably augmented and dropsical fluids removed. In catarrhal affections of the kidneys, bladder and entire genito-urinary organs, this drug will aid much in bringing about a complete recovery.

Collinsonia has a direct and stimulating action upon the absorbent system and mucous membranes, and is, therefore, of great usefulness in diseases of the glandular system. Its beneficial effect in dropsies is in no small degree owing to its stimulating influence upon the absorbent system. In wrongs of this nature it should be administered in doses of from five to ten drops of the specific medicine every two or three hours, until the system is brought under its control, and then continued in medium or even small doses three or four times a day.

The most prominent specific indications for collinsonia are as follows: Irritation, with a sense of constriction in the larynx; oppression with tightness in the epigastrium; painful constriction in the rectum; hemorrhoids with constriction of the sphincter, and a sense of a foreign body in the rectum; passive congestion with dark discoloration of mucous membrane; relaxed condition of mucous membranes, especially of the lower bowel.

"Collinsonia is a specific in minister's sore throat, adminis-

tered in the proportion of: ℞ Tincture of collinsonia, simple syrup, aa, half teaspoonful to a teaspoonful four times a day.

"It proves beneficial in other cases of chronic laryngitis, in chronic bronchitis and phthisis, allaying irritation and checking cough.

"It also exerts a favorable influence upon the digestive processes, improving the appetite, facilitating digestion and acting as a general tonic.

"It passes off through the kidneys, and exerts a tonic influence upon the entire extent of the urinary tract.

"I have thought that its influence was specially exerted upon and through the *pneumogastric,* relieving irritation of and giving strength to parts supplied from this source.

"Collinsonia is a specific in the early stages of hemorrhoids, and will sometimes effect a cure in the advanced stages of the disease. In this case it is employed in small doses: ℞ Tincture of collinsonia, gtt. x; water, ℥ iv; a teaspoonful four times a day.

" I have given the therapeutics of collinsonia thus briefly that the points named might make the greater impression upon the reader. I regard it as one of the most direct and valuable agents of the materia medica, and one that will give satisfaction to whoever employs it." (Scudder.)

"The principal therapeutical action of collinsonia seems to be exerted upon the venous system and mucous tissues. This action is largely through the medium of the pneumogastric, the drug relieving the conditions resultant from an irritation of the parts to which this nerve is distributed. In conditions attended with an arterial excitement and cardiac irritation it will overcome this irritation, and it is claimed it is through this same influence that it acts upon the mucous surfaces of the stomach and other tissues of the body. In studying its therapeutical properties there are three strongly distinctive indications which have served us as a signboard for its internal administration. They are briefly: Congestion, irritation and a sense of constriction. This trinity of indications is characteristic, and easily remembered. Though these, as a rule, are sufficient, to them a fourth can be added with profit, namely, hemorrhoids. This latter condition, as a rule, results from the first and second named, and all three are frequently due to congestion of the portal system, upon which system Hale claims the remedy has a special action.

"Its action as a tonic is upon the enfeebled muscular tissue, and from this action the remedy has a distinct ability to overcome relaxed and atonic conditions of the heart muscles and walls of the veins and capillaries.

"We esteem collinsonia one of the best remedies we possess in chronic catarrhal diseases of the mucous tissues of the pharynx, naso-pharynx and larynx. In selecting it as a remedy in

these diseases we follow the indications enumerated above—congestion, irritation and a sense of constriction. We find that chronic laryngitis, pharyngitis, and some forms of chronic bronchitis, respond promptly to its therapeutic action. One of the most marked results in chronic catarrhal pharyngitis we have ever witnessed resulted from the internal administration of specific collinsonia, uncombined with other remedies, save only the vehicle, simple syrup.

"The conditions calling for its administration are a relaxed condition of the mucous tissues of the pharyngeal walls; they are of a dark red color, and show evidences of an enfeebled capillary circulation.

"Collinsonia has long been a popular remedy for that condition of the larynx known as 'minister's sore throat.' This condition usually results from a prolonged and excessive use of the voice in a strained or unnatural key. The result is a congestion or hyperemic condition of the vocal organs. This produces aphonia, cough and a sense of constriction, which is promptly relieved by this remedy. It relieves the congestion and gives tone to the enfeebled organs.

"It is also an excellent remedy in the following diseases of the digestive system: Chronic gastritis or indigestion, where the circulation is defective and digestion is attended with pain and nervous symptoms occurring before meals; also when in addition to the derangement of digestion there is a congestion of the liver and a tendency to hemorrhoids.

"Of all the internal remedies for hemorrhoids, it is without doubt the best. We have frequently prescribed it with success, and we find upon investigation that many—in fact, all—writers upon the remedy, to which we have access, accord to it the same value we do in hemorrhoidal conditions. It is, indeed, one of the pronounced indications for the remedy. Hemorrhoids frequently result from a derangement of the portal circulation. Hale says it has a special action upon this circulation; hence its value in congestion of the liver and its circulatory apparatus. Not only is it of value in hemorrhoids, but it relieves spasms of the sphincter ani, proctitis, prolapsus ani, and many of the vague pelvic and abdominal symptoms due to these conditions. It is in these conditions Shoemaker advises the use of suppositories made from the powdered root. It not only relieves these conditions, but frequently relieves many of the reflex disorders induced by them, such as cough, asthma, chorea, headache and cardiac distress. We do not pretend to say it cures these diseases, no matter what may be the cause, but we desire it to be understood that it is only when they arise as reflex disorders from certain forms of rectal irritation which convey the indications as above enumerated. In the conditions named we have clearly before us the indication—hemorrhoids and constipation due to vascular en-

gorgement of the pelvic viscera; a sense of constriction, heat and weight in the rectum, with dry scybalous feces.

"In genito-urinary difficulties collinsonia has also some therapeutic value. In incontinence of urine it often relieves when other measures fail. Shoemaker, quoted above, administers it after supper and at bedtime for this difficulty. In vesical and urethral hyperesthesia and calculous affections it is also of considerable value.

"As has been stated, it has considerable influence upon the pneumogastric, hence its use in some forms of functional heart difficulties, such as irregularities, especially when they are dependent upon hysteria or chlorosis.

"The fact is apparent from what has been stated that the medicine is of value in congestion and irritation of the mucous membranes, no matter where located." (Mundy.)

"Collinsonia is a *heart tonic* of direct and permanent influence. It does not stimulate the heart to sudden action, but its continued use induces steady, permanent and highly satisfactory improvement in the strength and character of the organ, and a correspondingly improved general circulation.

"It is valuable when the heart is debilitated from protracted fevers, or from *rheumatic inflammation,* or from overstrain. It will be found excellent in the bicycle heart, in conjunction with small doses of cactus grandiflorus.

"In *chronic laryngitis or pharyngitis,* with relaxed walls of the larynx or pharynx, with dark discoloration and enfeebled capillary circulation, collinsonia exercises a prompt and direct influence, especially in the condition known as *clergyman's sore throat,* caused or increased by the use of the voice.

"In atonic conditions of the circulation of a local character, where *passive hemorrhages* are of frequent occurrence without apparent cause, where there is increasing debility, collinsonia and hamamelis given in conjunction, as above indicated, are positive curatives." (Webster.)

"Collinsonia is particularly useful in some forms of sore throats. Those that are caused or increased by a constant and continual use of the voice, commonly known as "clergyman's sore throat," are invariably benefited by its use. This benefit will be *quickly* manifested in the acute cases. Its prolonged use will cure many obstinate chronic cases.

"Many attacks of hemorrhoids, especially in the acute form, will be promptly relieved by this agent. In the puerperal condition, where this tendency is so liable to manifest itself, the administration of collinsonia will bring prompt relief.

"It will also be found valuable in many difficulties of the intestinal tract that are produced by irritation; it improves the ap-

petite, increases the amount of the gastric juice, and imparts a decided tonic effect upon this part of the human economy.

"Collinsonia is also one of our valuable heart remedies. It acts upon the tissues and valves of the heart by relieving irritation, increasing the power of its muscular action and regulating the muscular contraction.

"Foltz has found it beneficial in many conditions of the ear where there are increased secretions which are non-purulent in character. He also employs it in the early stage of middle-ear disorders *when follicular pharyngitis* and *hypertrophied Luschka's glands* are complications. This remedy is also of use in many atonic conditions of the stomach, relieving irritation and causing better innervation." (Howes.)

Collinsonia canadensis is tonic, stimulant, astringent, diaphoretic, diuretic and alterative. In very large doses it is irritant and emetic.

Indications.—Irritation, with a sense of constriction in the larynx; oppression, with tightness in the epigastrium; painful constriction in the rectum; hemorrhoids, with a constriction of the sphincter, and a sense of a foreign body in the rectum; functional diseases of the heart; chronic laryngitis; cough arising from excessive use of the voice, and the cough caused by diseases of the heart; catarrhal conditions of the respiratory mucous membranes; catarrhal conditions of the genito-urinary organs; spasmodic conditions of the stomach and intestines; hemorrhoids in the pregnant female.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 60 drops.

Usual Prescription.—℞ Collinsonia, gtt. v to x; water, ℥iv. M. Sig. Dose one teaspoonful every hour to every three hours.

Colocynthis—Bitter Cucumber—Colocynth.

Colocynth is often useful in dyspepsia, especially when there are colicky pains resulting from gas being lodged in various parts of the intestinal tract. It is also an indicated remedy in the same abnormality when there is a bitter taste in the mouth, eructations of yellow bitter-bilious liquid; sharp, cutting, griping or colicky pains in the stomach after taking food; and in flatulent or bilious colic characterized by these same distressing pains, and which cause the patient to bend over and press upon the stomach or abdomen, it constitutes a remedy of corrective power.

In some of these cases there is a tendency to nausea and vomiting, and the abdomen may be distended from large quantities of gas, often causing difficult breathing, palpitation of the heart and great anxiety.

Colocynth in minute doses is frequently indicated in dysentery, especially where there are very frequent but ineffectual attempts at stool, or when there are frequent, large, bloody, mucous discharges, with much distress. It is also of great value in some cases of diarrhea, especially when caused by eating an injudicious amount or kind of food, and in cases of cholera infantum when severe pain causes the child to scream and kick, colocynth may well constitute a part of the treatment. Colocynth was one of Prof. J. M. Scudder's favorite remedies in dysentery

Colocynth is tonic, alterative, resolvent, cholagogue and cathartic. In very large doses it is a dangerous irritant cathartic.

Indications.—Spasmodic constrictive pain; cutting pain in the bowels, with tormina and straining at stool; torpor of the abdominal organs; sharp pains in the ovarian regions; abdominal colic.

Dose.—Fluid extract, 1-20 to 3 drops; specific medicine, 1-20 to 3 drops.

Usual Prescription.—℞ Colocynth, gtt. i to v; water, ℥iv. M. Sig. Dose one teaspoonful every hour to every three hours.

Conium Maculatum—Poison Hemlock.

Conium is a reliable and frequently indicated remedy in chorea, and in some cases of hysteria it often constitutes a useful medicament. In tetanus it exercises no small degree of controlling power, and in teething minute doses are used with a soothing result. As conium in small doses stimulates the vascular and nervous systems, frequent indications are found for it in many abnormal conditions. It produces sleep by relieving pain —not like opium and its alkaloids, by benumbing sensation.

"In paralysis and paralysis agitans, and in the rheumatic feeble old patient who has constant pain and cacoplastic deposits, with eye complications due to debility, such as double vision, letters running together, poor accommodation because of a weakened or paralyzed condition of the ocular muscles, together with photophobia, ulceration of the cornea and a tendency to cataract,

conium, given in doses suitable to the patient in hand, will bring very pleasing results.

"Tetanus in early stages, persistent neuralgia, maniacal excitement, melancholy, the patient sitting quietly picking at his clothes or imaginary objects, with an inclination not to talk, in hypochondria and in other nervous troubles, conium will prove a remedy of great value.

"Conium will prove pleasantly palliative in cancer of the stomach or liver, in tuberculosis, ulcers, tumors, skin troubles, and the many ills of the strumous patient, and other troubles that cannot be cured. In many of these cases the chief hope is for relief from pain, and the search is for a remedy that will bring about a sweet forgetfulness of the constant pains and aches. Conium is better here than opium.

"Whooping-cough, and many of the persistent wrongs of teething children, succumb readily to very small doses of conium. The asthma of old people, of the debilitated, is often relieved by this drug.

"Conium is an anodyne of no mean worth in gastralgia, for those piercing, tearing pains of the joints and in the neck and back, beneath the scapula or in the lumbar region. It quickly relieves that numbness of the fingers and toes so frequently complained of by those of poor blood and poor circulation.

"Conium is a boon to those who indulge in excessive venery. It relieves that mental dullness and stupor, and dissipates the heaviness and aching pains of the back. In some cases conium is the equal of phosphorus or nux vomica as a remedy for impotence. In the male the sexual power is weak, with exaggerated desire; the erections are feeble and incomplete, of short duration. Emissions are excessive, and occur upon slight provocation, and often without bad dreams. The man may seem strong and healthy, but nervousness makes him usually weak. There is no satisfaction in coition or exertion. The female who will take conium and feel better either menstruates too early or the flow is scant and suppressed. There are crampy pains and a deep vaginal irritation. She has a weak back and complains of a paralyzed feeling in feet and limbs. She has no desire for nor pleasure in sexual embraces. She has leucorrhea after menstruating, and colicky pains before.

"Conium will many times arouse a suppressed sexual desire or appetite in either sex when the sequence of collapse, hysteria or melancholy. It will lessen or stop a spermatorrhea when the flow is provoked by constipation or slight movement of the body and the patient is debilitated. It sometimes helps materially to remove the hardness from the testicles following an orchitis.

"Conium serves to specifically impress the female breasts. The hardened, swollen glands, so often seen at or near the menstrual period, with sharp, cutting pains, and acutely tender to the touch,

are speedily relieved by conium. Distressing pruritus of the vagina or pudendum, occurring after the menstrual epoch, is quietly put to sleep by conium. The pain that runs through the back and down the thighs, in a woman who has womb trouble, hemorrhages, polypus, etc., who will not submit to operative measures, may be made more or less bearable by conium. Hyperesthesia of the genitalia after menstruation or during its suppression, is overcome by conium. It is said that indurated tumors about the sexual organs or cervix uteri, when accompanied by burning, cutting, knife-like pains, are bettered by conium. Leucorrhea that excoriates and burns the parts touched by the discharge, often seen in children, is lessened, if not stopped, by conium.

"Conium acts as well upon the urinary organs as upon the reproductive. In feeble people, with frequent, dribbling urination, especially at night, with burning, cutting urethral pain, a turbid, thick whitish or bloody urine, and a sense of weight or pressure about the bladder, it is *the* remedy that will satisfy patient and physician." (Bloyer.)

Conium maculatum is sedative, nervous and vascular stimulant and narcotic. It should be used with caution. If given too frequently or in too large doses it causes gradual paralysis of the motor nerves. Preparations from the seeds are much stronger than those from the leaves. Large doses of this drug should never be used.

Indications.—Excitation of the nervous system; low grades of inflammation, especially when the glandular system is involved; neuralgic pains; excess in motor activity; enfeebled state of the sexual organs; menses late and scanty; ovaritis with lancinating pains; ill-effects of suppressed sexual instinct; numb feeling in the brain, as if stupefied; dry, spasmodic, hacking cough.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Conium, gtt. v to x; water ℥iv. M. Sig. Dose one teaspoonful every hour.

Convallaria Majalis—Lily of the Valley.

The action of convallaria is much like that of digitalis, and may be used for precisely the same purposes as the latter drug. Its advantage over digitalis is that it has no cumulative action. By some investigators it is regarded as superior to digitalis as a diuretic and cardiac stimulant after failure of compensation,

the diuresis it occasions persisting for a considerable time after the withdrawal of the medicament.

"Convallaria may be used to lessen the frequency of the pulse when there is an impaired capillary circulation, as shown by ecchymosis or the slow return of blood when it is effaced by the finger. The tincture of the root has had some reputation in the treatment of rheumatism and dropsy, and to improve the digestive functions." (Scudder.)

Convallaria majalis is diuretic, tonic and sedative to the nervous system.

Indications.—Pain and oppression in the region of the heart; difficult breathing caused by cardiac disease; excited action of the heart; nervous palpitation of the heart; diseases of the heart and kidneys accompanied by dropsy. Locally: Nasal catarrh; vaginal leucorrhea.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, ¼ to 10 drops.

Usual Prescription.—℞ Convallaria majalis, gtt. x to ʒiii; water, ʒiv. M. Sig. Dose one teaspoonful every one or two hours.

Coptis Trifolia—Golden Thread.

The action of golden thread is somewhat similar to that of hydrastis. It is valuable as a tonic and stomachic in dyspepsia, and when the digestive organs are debilitated it will do much toward restoring them to their normal condition. In anorexia its power of promoting the appetite is unmistakable.

"Golden thread is a good tonic and stomachic. It promotes digestion and strengthens the viscera. It is a useful remedy in dyspepsia, debility, and in convalescence from fevers. It is much used as a gargle in ulceration of the mouth." (Beach.)

Coptis trifolia is a non-astringent bitter tonic and stomachic.

Indications.—Conditions in which a powerful bitter tonic is required. Locally, as a wash or gargle: Aphthæ, ulcers in the mouth, psoriasis of mucous membranes and ulceration of the tonsils.

Dose.—Fluid extract, 10 to 30 drops.

Usual Dose.—10 to 20 drops.

Corallorhiza Odontorhiza—Crawley.

In any abnormal condition in which an energetic diaphoretic is required, crawley can be employed with the utmost confidence.

In chronic pleurisy it is a valuable agent, and in the night-sweats of phthisis its restraining influence is comforting to the patient. In general debility the long-continued use of crawley is very beneficial, and in wrongs in which there is loss of appetite, flesh and strength, associated with a hacking cough, it exerts a corrective influence. In conditions in which the symptoms indicated approaching phthisis, crawley is said to have many times exerted a delaying influence.

"When in acute pulmonic troubles a non-stimulating diaphoretic is needed, we can employ none better than the crawley root. To 'break up a cold' it is one of the most certain drugs known. Its scarcity and high price alone prevent its general use. It is fully equal to asclepias, and lacks the dangerous features of jaborandi. It has done excellent service in diphtheria. Acute and chronic pleurisy are both conditions in which it will prove curative. Years ago it was used for the control of colliquative sweating of phthisis, and will be found equal to muscarine and salvia for this purpose. It is one of the best remedies ever employed for the general debility preceding pulmonic affections. I have employed it with the best results in cases where all the symptoms were those of incipient consumption, with the most beneficial results. There is hacking cough, loss of weight, want of appetite, pleuritic pains and marked general prostration. The remedy will be found slow, but certain in its action. From three to five weeks will be required before any good results can be observed. The appetite is the first to respond, the cough and pain cease, there is increased urinary product, and the functions of the skin are better performed. The patient increases in strength and flesh, and all the unfavorable symptoms disappear. It has been employed in dry bronchial irritation with 'tightness across the chest, wheezing, and severe paroxysms of irritable cough,' and in one case where enlarged thyroid caused mechanical bronchial irritation, the physician was successful in removing the condition by the reduction of the size of the goitre with this agent. It should be employed either in infusion or tincture, and the doses should be moderately large and long continued." (Felter.)

Corallorhiza odontorhiza is diaphoretic, sedative and tonic.

Indications.—Hacking cough, with loss of appetite and weight, pleuritic pains and general prostration; bronchial irritation with tightness in the chest; night-sweats of phthisis.

Dose.—Fluid extract, 10 to 60 drops; tincture, 10 to 90 drops.

Usual Dose.—Tincture, 30 drops.

Cornus Florida—Dogwood.

Cornus is a tonic of considerable power, and is used in general debility and in the convalescing stages of acute diseases with much benefit. In all the wrongs of life in which an antiperiodic tonic is needed it may be relied upon as being as efficient as any of its class. The astringent properties are not great, and will seldom interfere with its general employment. In chronic intermittent fever, especially when associated with nausea and diarrhea, it is used with corrective results. In all cases in which quinine cannot be employed cornus answers well as a substitute. Cornus is said to be most successful in the cure of fevers when the remissions are marked and distinct. It affords prompt relief in so-called heartburn, and its continued use will aid much in preventing its recurrence, by restoring the tone of the stomach, and so removing the tendency to fermentation.

Cornus may well constitute a part of the treatment of leucorrhea, and as a general tonic it is of value in the diseases peculiar to women.

Cornus florida is tonic, stimulant and astringent.

Indications.—Relaxed or enfeebled states of the system; general exhaustion; miasmatic fevers; pyrosis; indigestion with stupor, headache and acid eructations; chronic intermittent fever, when nausea and diarrhea attend the paroxysms; convalescing stages of acute diseases; acute intermittent fever, especially when there is dullness, drowsiness, headache and exhaustion.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Cornus florida, ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Corydalis Formosa—Turkey Corn.

Corydalis has been employed in all stages of syphilis with the most satisfactory results. Its influence in this disease causes syphilitic eruptions and nodes to disappear and the falling of hair to be lessened. Corydalis is also an efficient remedy in some skin diseases, and is especially valuable as a means of overcoming eczema associated with great relaxation of tissue and general plethora. Relaxation of the part involved is a marked indication for corydalis. It increases the general waste through the several emunctories of the body, thereby removing debilitated

tissue, and aiding in bringing about improved nutrition and a better condition of the body. In scrofulous states, with poor digestion, profuse secretion of mucus and foul breath, its action is corrective, and in atonic conditions of the genito-urinary organs it is said to be useful. In leucorrhea, amenorrhea and dysmenorrhea it is often employed with advantage.

Corydalis formosa is tonic, diuretic, and alterative.

Indications.—Derangements of the stomach, attended with profuse secretion of mucus, a constantly-coated tongue, fetor of the breath and loss of appetite; chronic diarrhea; erosions and ulcerations of the mouth and fauces; syphilitic diseases, especially in the second stage.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.— 5 to 10 drops.

Cratægus Oxyacantha—Hawthorn.

Cratægus is employed with remarkable success in both functional and organic wrongs of the heart. In angina pectoris and in valvular deficiency, with and without enlargement, most wonderful results have been obtained from its exhibition after the failure of some of the best-known heart remedies. In cardiac dropsy its action is promptly curative, and in dropsical conditions not of cardiac origin it is said to be efficient. The best results are usually obtained from doses not exceeding two to five drops of the specific medicine (or a good fluid extract) every two to four hours. Very large doses frequently cause nausea and a sensation of fullness in the head.

The following case, somewhat illustrating the power of cratægus, was reported by a reliable observer:

"A lady became ill in December, 1896, and was attended by a competent physician. A diagnosis of enlargement of the heart was made, and the doctor carefully treated her for a period of six weeks. At the end of that time, there having been no improvement, but rather an increase in the distressing symptoms, she consulted another physician. She was treated at home for several months by this physician, with no change for the better; but, on the contrary, she became incapacitated by her affliction so that she was unable to move about the house at all without bringing on attacks of faintness and symptoms of complete collapse. At this time, in accordance with the advice of her phy-

sician, she was removed to a hospital, where she remained ten weeks in bed, under his constant attention, with the hope that the much-vaunted 'rest cure' would relieve her, for her condition was now so alarming that her friends had given up all hope of her recovery.

"At the end of ten weeks, there being no improvement, her husband took her home. At that time she was unable to walk across the floor without the symptoms of heart failure appearing. After a course of treatment by electricity with the usual result—no improvement—I was sent for. An examination of the heart determined the presence of hypertrophy with dilatation, displacement of apex beat, weak action, heart sounds prolonged, but no valvular lesions. Further physicial examination disclosed an irregular and intermittent pulse, general anasarca, etc.; the least exertion caused dyspnea, faintness and symptoms of collapse. No special cause for the heart trouble could be given by her, except many years of overwork and abuse of coffee.

"After listening to her account of the several courses of treatment she had received, I came to the conclusion that it was wise to try a new remedy in her case, which I had been using with good results when the usually indicated remedies had failed to relieve. I therefore prescribed cratægus oxyacantha, five drop doses of the tincture in water every three hours. The results were simply marvelous; in three weeks she was able to visit me at my office, about two miles from her home, walking to and from the car with very little assistance, and her improvement was continuous from the first. In about three months the dropsy had disappeared, the heart's action was strong and regular, with only an occasional intermittence, and to live had become again a pleasure to her.

"About this time she became pregnant (she was already the mother of three children, all living and in good health), which naturally alarmed her greatly, as she had no idea that it was possible for her to endure such a strain, as she well knew from past experience what was required, even in labor which was fairly normal, as hers had been. However, I did everything possible to get her into good condition before the time expired, and she passed safely through the crisis with no further accident than a slight post-partum hemorrhage, which was easily controlled. She is now fairly well, as well, I think, as any one with an enlarged heart can expect to be. She does all her work in her own flat, for her family of five, and has gained greatly in weight and strength, although her nursing infant is now only eight months old. In her case cratægus seems to have made it possible for compensation to be restored with results as stated."

"Cardiac impulse, after a few days' use of the cratægus, is greatly strengthened, and yields that low, soft tone so charac-

teristic of the first sound, as shown by the cardiograph. The entire central nervous system seems to be influenced favorably by its use; the appetite increases, and assimilation and nutrition improve, showing an influence over the sympathetic and the solar plexus. Also a sense of quietude and well-being rests on the patient, and he who before its use was cross, melancholic and irritable, after a few days of its use shows marked signs of improvement in his mental state. I doubt if it is indicated in fatty enlargement. The dose which I have found to be the most available is from ten to fifteen drops after meals or food. If taken before food it may, in very susceptible patients, cause nausea. I find, also, that after its use for a month it may be well to discontinue for a week or two, when it should be renewed for another month or so. Usually three months seem to be the proper time for actual treatment, and after that only at such times as a warning pain in the heart or dyspnea may point out." (Jennings.)

"I was a victim of angina pectoris. I began cratægus with six drops, increasing to ten, before meals and at bedtime. In twenty-four hours my pulse showed marked improvement; in two or three weeks it became regular, smooth and forceful. Palpitation and dyspnea soon entirely left me; I began to walk up and down hills without difficulty, and a more general and buoyant sense of security and well-being has come to stay. After three or four months' use of the remedy, beginning over a year ago, and intermitting a week now and then, and an occasional use for a day or two once or twice since, every symptom of the disease has left me, so far as I can know myself. Of course, as to the permanency of these results time alone must declare; it is too recent a cure to be self-confident about." (Clements.)

"Since the first published papers on the action of cratægus oxyacantha, two years ago, much important investigation has been made and many of its asserted beneficial properties have been confirmed. In its action upon the heart it seems to exercise a direct influence in angina pectoris, or enlargement with valvular incompetence in the different forms of carditis, in tachycardia, neuralgia and rheumatism of the heart, and in various forms of simple palpitation with vertigo.

"Its most direct influence has been observed where, in plethoric, feeble cases, there was enlarged heart, with all valvular faults, and in some cases arterio-sclerosis, with general dropsy. These have had most prompt relief. In angina pectoris, with aortic regurgitation, it has proven a most prompt remedy. Notwithstanding our confidence in cactus, it has cured cases not influenced by cactus.

"One writer claims that the agent has solvent powers on calcareous and crustaceous deposits in the lumen of the arteries,

which resembles the action of potassium iodide on the nodules of syphilis. It promotes absorption of serous fluids and morbific deposits, and at the same time is a stimulant, tonic and nutritive to the organ itself through its restorative influence upon the nervous system.

"I had two cases of extreme heart murmurs with violent palpitation and pain, with marked dyspnea in one of the cases, caused in both cases by over-taxation of the nervous system, resulting in neurasthenia. They were both treated with this remedy alone as a heart remedy, but had iron and bitter tonics and remedies for the stomach in addition.

"The results in both cases were highly satisfactory. In the worst case the entire group of symptoms seemed to respond promptly to the cratægus, and the recovery was permanent.

"I am inclined to the opinion that smaller doses of the remedy, more often repeated, act more satisfactorily than larger doses at infrequent intervals. My advice in the latter case above was to take from four to six drops of the specific cratægus from the first, every three hours, and the results were all that could be desired. There is a growing tendency on the part of observers to quite reduce the originally-advised dose." (Ellingwood.)

Cratægus oxyacantha is tonic, stimulant, solvent and restorative.

Indications.—Cardiac neuralgia; palpitation; vertigo; irregular and intermittent pulse, with increased rate; despondency and anxiety; extreme dyspnea on slight exertion, usually accompanied with pain in the region of the heart; mitral regurgitant murmur; nervous indigestion with constipation from atonic conditions of the lower bowel; great exhaustion from slight mental or physical exertion; albumin and excess of phosphates in the urine; swelling of hands and feet, with a feeling of prostration; affections of the heart following attack of inflammatory rheumatism; valvular deficiency with or without enlargement.

Dose.—Fluid extract, 5 to 15 drops; specific medicine, 5 to 10 drops.

Usual Prescription.—℞ Cratægus oxyacantha, gtt. x to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every half-hour to every three hours.

Creasotum—Creasote.

It is possible that no one drug exerts as favorable an action upon the night-sweats, cough and expectoration in pulmonary

tuberculosis as creasote does. The remedy should be continued in large doses for many months, beginning with a medium dose and increasing it every five days until thirty drops are being administered daily. The creasote preparation known as guaiacol is preferred by many practitioners.

Creasotum is antiseptic, styptic, narcotic and escharotic. In very excessive doses it causes coma and convulsions.

Indications.—Fermentative process in the stomach and intestines; incipient pulmonary tuberculosis; hysteria; chronic catarrh; chronic gonorrhea and gleet; vomiting of pregnancy.

Dose.—1-6 of a drop to 2 drops.

Usual Dose.—1 drop; well diluted, or in tablet form.

Creolinum—Creolin.

This agent is reputed to not only keep fresh wounds aseptic, but also to deodorize and render aseptic suppurating and ichorous wounds and to promote healthy granulations and cicatrization. A mixture of one-half to one part to 100 parts of water is used as a lotion and dressing to fresh wounds. For the disinfection of septic wounds a 2 to 4 per cent. mixture is employed, and a ½ per cent. mixture is used for washing out the bladder in cystitis. It is also valuable as a disinfectant of privy vaults.

Caution should be observed in the use of this drug, as cases of poisoning have resulted from its employment. At least one fatal case has been reported, and several other cases of poisoning have occurred which finally recovered. The symptoms presented were scarlatiniform eruption, albuminuria and dark-colored urine.

Creolinum is antiseptic and disinfectant.

Indications.—Conditions requiring a gastric and intestinal antiseptic; internal parasites; tuberculosis; fermentative changes in the stomach. Locally: Wounds; septic wounds; cystitis.

Dose.—1 to 4 minims, but its internal use is not here recommended.

Crocus Sativus—Saffron.

Saffron has long been successfully employed in eruptive diseases as a means of developing the eruption, especially when retrocession has occurred.

Crocus has a specific action on the uterus, and in amenor-

rhea, as well as in profuse bleeding, it exerts a corrective influence. In menorrhagia, especially when the discharge is clotted, it modifies the pain and restores normal menstruation, and in suppression of the lochia it is deemed useful. In chronic loss of blood from the uterus it is also said to be an efficient remedy.

Saffron possesses considerable therapeutic power, and should receive further study. The claim sometimes made that it is inert is not well founded.

Crocus sativus is diaphoretic and emmenagogue.

Indications.—Suppression of the lochial discharge; pains in the lumbar region accompanying menstruation; congestive dysmenorrhea, especially when the discharge is dark and stringy; colic and flatulence; hysteria; chlorosis; discharge of dark, tarry blood from the uterus. The discharge is usually clotted and in strings.

Dose.—Fluid extract, 10 to 60 drops.

Usual Prescription.—℞ Crocus, gtt. v to x; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Cupri—Copper.

The cases in which copper is found beneficial are usually associated with anemia, without great loss of flesh. The surface is pallid, or tawny, the skin waxy, and the parts involved sometimes have a greenish tinge. The tongue is broad and pallid, and the bowels torpid. The pulse is rather full but without sharpness of stroke.

"The drug referred to here is the specific medicine cuprum, based on Rademacher's process, an alcoholic preparation of acetate of copper, and not the sulphate or commercial acetate.

"The late Prof. Scudder used cuprum with great satisfaction, and described it as a 'blood-maker' *par excellence*. Our experience with it has been very pleasant, and we prescribe it with confidence. Of course, it is not a remedy to be given in treating every case of anemia. Due discrimination must be observed. It is especially indicated in those severe cases of exhaustion or anemia in which there is little or no loss of flesh, and really no very apparent reason for the existing condition. Usually the surface is pallid, tawny, waxy, even of a greenish hue; the tongue is broad, full and clean; the lips and mucous membranes generally are pale, blanched; the bowels are torpid, and the pulse full and more or less sharp. Occasionally the tongue is covered with a dull, cheesy, greenish fur. Every

feature of the patient emphasizes his exhausted condition and the poverty of his blood. Frequently the ductless glands are diseased when this condition presents, and have been for some time; or there have been exhaustive hemorrhages from some part of the body, and the expected recuperation has not followed. The bleedings may have been from the womb, or from the lungs, or from the kidneys. Or the chlorotic condition may have followed a colliquative disorder, as in the second stage of cholera, or in cholera morbus or cholera infantum. It is not an uncommon thing to find these anemic states accompanied by a sharp spasmodic cough, or it may be a sequence of pertussis.

"No matter what the name of the disease that precedes the condition here described, cuprum is the remedy. It is a better blood-maker than iron, the hypophosphites, or any other remedy or combination of remedies known to us. In an effeort to relieve this persistent anemic condition the physician is often tempted to stray into the field of patent or proprietory compounds—to us the ready-made, hand-me-down drugs, whose number is legion. Do not prescribe routinely for anemia; but when you have a case in which the symptoms are as above, use cuprum." (Bloyer.)

Copper is tonic, alterative, stimulant, astringent and emetic.

Indications.—Skin showing a dirty, greenish tinge; debility from severe hemorrhages or exhaustive discharges; surface pallid or greenish; diseases of the ductless glands; anemia and chlorosis; diarrhea and dysentery when the stools are streaked with blood and there is tenesmus and colicky pains; phosphorus poisoning. In the latter case it should be used with great caution, lest of itself it produce acute poisoning

Dose.—Sulphate of copper, ⅛ to ½ grain (as an emetic, 2 to 3 grains); arsenite of copper, 1-100 grain.

Usual Prescription.—℞ Specific cuprum, gtt. x to xx; water, ℥iv. M. Sig. Dose one teaspoonful every three or four hours.

Cyperus Articulatus—Antiemetic Root.

This drug is said to be very efficient in checking emesis, whether of pregnancy, indigestion, or yellow fever. It has a pleasant aromatic flavor, and produces a general feeling of warmth and comfort in the stomach.

Cyperus articulatus is antiemetic, stomachic and antispasmodic.

Indications.—Nausea and vomiting; vomiting in yellow fever; atonic dyspepsia; whooping-cough.

Dose.—Fluid extract, 5 to 30 drops.

Usual Dose.—5 to 20 drops.

Cypripedium Pubescens—Yellow Ladies' Slipper.

Cypripedium is a useful remedy in sleeplessness and irritability from atony. In neurasthenia it has long been employed with great satisfaction, and in nervous hyperesthesia it is deemed a remedy of merit. Cypripedium exercises an influence which is corrective in many cases of menstrual irregularity associated with despondency, and in all functional disturbances of the nervous system characterized by a tendency to depression it constitutes a most efficient medicament.

"In its sphere of action, cypripedium is a nervine, acting mainly or entirely on the nervous system. Its usefulness is confined to functional derangements, as it has no effect upon organic lesions. The nature of its action is that of a mild tonic and stimulant, strengthening nerve action and increasing nerve power; improving the circulation and nutrition of the nerve centres, and allaying nervous irritability. It tends to produce a calm and peaceful frame of mind, and thus it favors sleep.

"In addition to these principal actions, some authors have claimed for cypripedium a diaphoretic and diuretic action, and a special action on the sexual system, especially the female sexual organs. Waugh has used it largely to relieve sexual erethism, and considers that it soothes the sexual organs and quiets their irritability. This result he says has followed the use of cypripedium in both sexes.

"Its specific indications would seem to be: (1) A tendency to depression of spirits; (2) abnormal excitability and irritability, especially of the sexual system; (3) a condition of wakefulness due mainly to mental causes, especially of a depressing nature." (French.)

Cypripedium pubescens is tonic, stimulant, diaphoretic, nervine and antispasmodic.

Indications.—Nervousness and sleeplessness from atony; restlessness and twitchings; typhomania, and tremors of patients in low fevers; nervous excitement of hysteria.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—10 to 30 drops.

Cytisus Scoparius—Broom.

This is a very efficient remedy in dropsical conditions, and is worthy of more careful study than it has heretofore received.

Cytisus scoparius is diuretic, tonic, stimulant, laxative, and, in large doses, emetic and cathartic.

Indications.—Decreased flow of urine; dropsy of the thorax, combined with disease of the lungs; scurvy and jaundice.

Dose.—Fluid extract, 20 to 60 drops.

Usual Dose.—20 to 30 drops.

Datura Stramonium—Stramonium—Thorne Apple.

In excitable mania and in acute delirium stramonium is deemed a useful remedy. In muscular tremblings it exerts a beneficial influence, and in vertigo and unsteadiness from chronic indigestion it is an efficient remedial agent. In spasmodic coughs and in spasmodic asthma it is employed with satisfactory results. In the latter affection stramonium leaves are smoked in a pipe. Sometimes they are mixed with sage, in equal parts, and smoked, using about fifteen grains of the mixture each time.

The action of stramonium is much like that of belladonna, but it is said to contain a larger amount of hyoscyamine than belladonna.

"Stramonium may be given in acute disease, when the patient is *furiously* delirious; in delirium tremens when the patient is enraged and inclined to injure those present, destroy the furniture or harm himself; in violent mania; in epilepsy associated with paroxysms followed by maniacal excitement. In chronic disease it is enough that the patient feels inclined to violent outbursts of passion, and has difficulty in restraining himself.

"It is in some degree an antidote to the opium habit, and in some cases, if its use is persisted in, it will effect a cure. In this case it should be given with some simple stimulant, as comp. spirits lavender, or comp. tincture of cardamon.

"It is employed to relieve asthma, both as an internal remedy and as an inhalation, but it is difficult to describe the cases in which it will prove beneficial. It is also an excellent remedy in chronic disease of the skin, with hypertrophy and pruritus.

"An ointment may be prepared from the fresh flowering tops and young leaves, by pouring over them hot mutton tallow, allowing the vessel to remain where it will be kept just below the boiling point for two hours. This is strained through flannel,

using some pressure. This ointment will be found an excellent application to hemorrhoids, and in cases of pruritus ani, with hypertrophy of the skin." (Scudder.)

"As a remedy stramonium is classified as a powerful narcotic, antispasmodic and anodyne. Its most satisfactory use in our opinion is in controlling nervous excitement, from the slightest delirium to the wildest mania. It is in many of these cases by far a much better and safer drug than opium. In this category falls nervous headache or erythism, with flushed face, etc., restlessness, acute delirium, or insanity or epilepsy in which the patient is noisy, violent, destructive and uncontrollable, furious, even suicidal. It is efficient in delirium tremens and in puerperal mania, and in hysterical convulsions, when there is alternate crying and laughing, and in nymphomania, and in depressed mental states generally.

"In spasmodic affections like asthma, laryngeal cough, whooping-cough, hepatic colic; chorea, stammering, etc., stramonium is worthy of closest consideration. As a cough remedy it does not lessen the secretions. In whooping-cough it lessens the spasm, the tendency to hemorrhage and vomiting. In full congested state, stramonium will frequently stop hemorrhage from the nose and buccal cavities. It is frequently a remedy for unsteady gait, trembling of the hands and vertigo.

"In many painful affections when morphine or opium is usually given stramonium would be by far the better remedy. This is true in dysmenorrhea, in neuralgia and affections of the cervical nerves, in tic douloureux, in sciatica, etc.

"Stramonium should not be forgotten in eruptive diseases. While perhaps it is not the equal of belladonna in developing the eruption, its quieting effect upon the nervous system and its freeing of the secretions favor such development. There is a state of congestion calling for it. The face is red, bloated, full." (Bloyer.)

Datura stramonium is anodyne, sedative, antispasmodic and a narcotic poison.

Indications.—Sense of constriction in the throat with difficult deglutition; acute or chronic mania; delirium attending fevers; delirium tremens; puerperal insanity, when there is noisy raving, red or bloated face and dilated pupils.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, ¼ to 10 drops.

Usual Prescription.—℞ Stramonium, gtt. v to x; water, ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Delphinium Staphisagria—Stavesacre.

Staphisagria is extensively employed in chronic inflammation and atony of the genito-urinary organs, and with results that are unmistakably curative. In irritation of the testes and prostate and urethra it is one of the most efficient remedies, and in prostatorrhea it seldom fails to markedly lessen the annoying discharge. In too frequent nocturnal emissions its influence is corrective, and in gonorrhea it is a remedy of great value.

In diseases peculiar to women staphisagria constitutes a medicament of frequent usefulness. It is an excellent remedy in amenorrhea, and in some cases of dysmenorrhea, especially when the menses come at greatly prolonged intervals and continue for an unusual length of time, this agent is employed with much advantage. In hysteria associated with chronic irritation of the uterus it is also useful, and in chronic irritation and catarrh of the bladder it exerts a corrective influence.

"Staphisagria has a specific action upon the reproductive organs of both male and female; but more marked in the first. It quiets irritation of the testes, and strengthens their function; it lessens irritation of the prostate and vesiculæ; arrests prostatorrhea, and cures inflammation of these parts. It also exerts a marked influence upon the urethra, quieting irritation and checking mucous, or muco-purulent discharges; it influences the bladder and kidneys, but in less degree.

"The action of staphisagria upon the nervous system is peculiar. It exerts a favorable influence where there is depression of spirits and despondence, in cases of hypochondriasis and hysteria, especially when attended with moroseness, and violent outbursts of passion." (Scudder.)

"In chronic gleet I have been enabled to do more in the complete cure of the cases with this remedy than with any other single remedy, having succeeded nicely even in very protracted cases. It is not ordinarily advised in the acute stages of inflammation of the prostate, but in cases of subacute or chronic enlargement with chronic irritation it is useful, especially if combined with saw-palmetto. I have certainly found these two remedies to work very nicely together.

"In urinary irritation, common to old men with prostatic enlargement, with frequent desire to urinate, it overcomes the desire and the subsequent tenesmus, producing a sensation of restored tone. This result will occur if there is any inflammation of the bladder, provided it is combined with thuja or with chimaphila.

"There is a class of these stubborn conditions that will yield to a combination of these three remedies, with perhaps the addition of gelsemium or cimicifuga if the nerves are involved, and will induce results most highly satisfactory.

"In the treatment of certain forms of impotency I give this remedy with saw-palmetto and avena. It increases sexual power when imperfect and arrests excessive prostatic discharges. It is a remedy for nervous excitement and nervous irritability which depends upon sexual irritation or upon any disease of the genito-urinary organs. It should be given for certain forms of mental depression which occur in conjunction with hysteria or hypochondriasis, especially if accompanied with violent outbursts of passion." (Ellingwood.)

Delphinium staphisagria is diuretic, emmenagogue and vermifuge. In very large doses it is a violent cathartic and acrid poison.

Indications.—Sensation of fullness in the perineum and along the urethra; mucoid discharges from the urethra; irritation of the prostate; diseases of the sexual organs of females when there is despondency, moroseness, hypochondriasis, or hysteria; chronic gonorrhea and gleet; prostatorrhea and spermatorrhea; leucorrhea; chronic vaginitis; chronic cystitis.

Dose.—Fluid extract, 1 to 3 drops; specific medicine, 1-6 to 3 drops.

Usual Prescription.—℞ Staphisagria, gtt. xxx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every two or three hours.

Digitalis Purpurea—Foxglove.

Digitalis in small doses is a stimulant to the heart, but in large doses it is a powerful sedative. In atonic conditions it constitutes a medicament of great usefulness. It is often employed as a sedative in some fevers, and in abnormal states requiring a powerful heart tonic it is deemed a very reliable remedial agent.

Digitalis should be used with great caution. Its marked peculiarity is its cumulative effect. It may be administered for some time without any apparent result when its poisonous effects may suddenly cause great depression, nausea, giddiness, want of sleep and convulsions. The cumulative effects of this agent are not likely to result from the small doses provided for in the "Usual Prescription."

"Digitalis may be employed for the general purposes of a

sedative, to lessen the frequency of the pulse, and the temperature, in cases of fever and inflammation. It is somewhat analogous to aconite, and exerts the best influence in atonic conditions. For these purposes, however, it must be used in small doses.

"It is a powerful cardiac tonic when used in small doses, and may be employed in any case of heart disease where the organ is enfeebled. It not only gives the necessary stimulation for the present, but it gives a permanent improvement; doubtless through an improved nutrition.

"It exerts an influence upon the capillary circulation, and may be employed with much certainty to arrest asthenic hemorrhages. It also influences the absorption of dropsical deposits, and increases secretion from the kidneys, probably in the same way." (Scudder.)

"Digitalis rests the heart by prolonging the asystole, thus allowing the chambers to become better filled with blood. In proper doses it is a valuable drug, but in large doses it is poisonous. If poisonous doses be taken, it produces nausea, vomiting, salivation, giddiness, flushing of the face, cold sweat, swelling of the lips and tongue, fetid breath, intermittent pulse, convulsions, and death. It is an acro-narcotic poison; it paralyzes the heart, produces cramps in the limbs, depresses nervous functions, and irritates the digestive organs. The intermittent pulse in case of cardiac debility indicates digitalis. In sufficient doses it is one of the most powerful sedatives, though a stimulant to the kidneys as well. Applied to abraded surfaces it produces irritation and inflammation. It increases the circulation of the stomach by irritation of its mucous coat. In moderate doses it is stimulant to the muscles of the heart, and contracts the arteries.

"Digitalis is one of the best remedies in the materia medica for dropsy, when the heart action is feeble. In general dropsy, when the breathing is difficult and distressing, especially when lying down and the jugular veins are enlarged, the face pale or dusky, the urine high-colored and scanty, and the pulse frequent, feeble, fluttering, and irregular, we have the case for its exhibition. It gives increased power to the heart, and, being eliminated by the kidneys, it stimulates them to greater activity. Use it in many cases of cardiac disease where the heart action is feeble and rapid. These cases usually terminate in dropsy, and this is a good agent to prevent such a termination. It is valuable in rheumatism when the patient is threatened with heart failure from the effects of the disease." (Locke.)

"There are three degrees of the action of digitalis. First, when given in small doses frequently repeated it affects all the organic functions, but produces no effect on the cerebro-spinal function; all the other functions are depressed. Its influence

on the circulation is not regular, sometimes exalting and at other times depressing it. Secondly, when large doses are given the previously named symptoms are increased in intensity. In the third degree, vomiting, purging, griping of the bowels, irregular pulse, cold sweat, great debility, convulsions and death take place." (Pereira.)

The conclusions which follow were pointed out by a French author as the result of his recent study of digitalis:

"1. The retardation of the pulse observed after the intravenous injection of substances of the digitalis group, due to stimulation of the vagus, is partly dependent upon the rise of blood-pressure produced by these substances in the proper dosage. This rise of blood-pressure may exert a weak stimulation upon the intercardiac inhibitory apparatus of the heart, but its chief effect is retardation of the pulse by way of reflexes passing from the sensory nerve terminations in the heart through the vagus to the vagus center.

"2. An increase of intracranial pressure, as might result in stimulation of the vagus center, does not enter into consideration for the causation of the retardation of the pulse rate.

"3. The heart-beat being still considerably retarded as compared to the normal standard, after omission of the rise of blood-pressure, and increase of intracranial pressure not participating in the vagus stimulation, the diminution of the pulse-rate may be interpreted in part as a direct effect upon the vagus.

"4. The stimulation of the vagus by digitalis preparations is to be interpreted as a central and peripheral effect."

Digitalis purpurea is sedative, diuretic, alterative, resolvent and antiseptic. In very large doses it is an irritant poison.

Indications.—Dropsy; frequent pulse with enfeebled action of the heart; frequent pulse with scanty urine; distended jugular veins; continuous difficult or labored breathing, worse at night; irregularity of the heart's action, with excitement from slight causes.

Dose.—Fluid extract, 1 to 3 drops; specific medicine, 1-6 to 3 drops.

Usual Prescription.—℞ Digitalis, gtt. x to xxx; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Dioscorea Villosa—Wild Yam.

Dioscorea has long been regarded as a medicament of wonderful power in the treatment of colic, but many physicians have seen cases of this abnormal condition in which the drug

exerted but little, if any, curative influence. There surely must be some good reason for this lack of uniformity of action of the remedy, and it may be possible that the difference in effect is owing to failure on the part of the doctor employing the agent to closely observe and correctly understand the disease expressions presented in the cases in which it failed to improve the condition of the patient. He may have prescribed for the *name* colic, instead of the wrong which actually existed as the cause of the colic. In colic, as in diarrhea, the indications for the remedies are not always the same, any more than the causes are always the same. Unless a medicine is clearly indicated we should not expect curative results from its exhibition, but a remedy which will once remove a wrong of life will always remove the same pathological condition under *exactly* the same circumstances. When we have once learned this we have learned it for all time. If it is true to-day it will be true in the years to come. A drug, however, which will cure a disease caused by atony cannot be expected to remove a wrong caused by excitation. In referring to the action of dioscorea in colic, Dr. G. M. Aylsworth in substance says:

"Gould defines colic as 'spasmodic pain in the abdomen.' Intestinal colic is due to irregular and violent contractions of the muscles of the bowels. Byron Robinson says these contractions are controlled by Auerbach's ganglia through the plexus mesentericus. C. J. B. Williams says disease consists of excess, defect or perversion of normal life, necessitating, according to Scudder, sedation, stimulation or alteration for cure.

"Intestinal colic, then, is either perversion due to excess, or perversion due to defect in the nervous energy generated in Auerbach's ganglia. Experience has shown that medicines making directly for the correction of these two distinct conditions are by far the most successful in the treatment of intestinal colic. Dioscorea meets an excited or excessive nerve force and directly sedates it to the normal, the large dose being useful to quickly produce the effect.

"Small doses of colocynth meet a defect in nerve force and stimulate it to the normal. The dose must be very small, for in large doses colocynth will produce colic.

"In these instances colocynth and dioscorea are *directly* curative, morphine is not. Morphine only reaches the condition to afford relief by paralyzing sensation, which is a function of the cerebro-spinal nervous system. This means that the force from Auerbach's ganglia may still be acting abnormally, but owing to the paralysis of sensation due to the morphine the brain is

unable to impress the condition on the patient's consciousness. This is almost an exact parallel to the use of chloroform in labor, where painful uterine contractions continue to the end of accouchement, but the patient does not know it because the chloroform does not permit the nerves of sensation to perform their duty."

The credit of first using dioscorea in colic belongs to Dr. Bone, who resided in New Jersey in the latter part of the eighteenth century. He employed a decoction of the root, and gave one-half teacupful of it every half hour. A second or third dose seldom failed to relieve the patient of his sufferings. It was from this physician that Dr. Wooster Beach obtained his knowledge of the medicinal properties of this now well-known remedy.

Dioscorea has valuable properties besides those found useful in the treatment of colic. In the nausea attending pregnancy it often affords much relief, and as a modifier of after-pains it acts in a very satisfactory manner. In dysmenorrhea it aids in rendering the painful condition bearable, and in hysteria it may well constitute a part of the treatment. Hepatic diseases, especially when accompanied with irritability of the stomach, are among the wrongs in which indications for this agent are likely to be seen, and as a remedy for dysentery and all spasmodic affections of the stomach and bowels, it is of frequent usefulness. It is also highly esteemed by many physicians as an expectorant in asthma, whooping-cough and bronchitis.

"Dioscorea is indicated by constant, cramp-like abdominal pains. The exacerbations are marked. The tongue is usually coated; the belly muscles tender and contracted; the skin is yellow and dry, and the conjunctiva more or less yellow and injected. Many times the pain extends throughout the body. There is more or less abdominal distension. As far as symptoms of indications are concerned, the remedy is closely allied to colocynth. The two remedies should be studied at the same time, and their specific actions closely contrasted.

"Dioscorea is said to be a specific for bilious colic, and the recommendation is to give five drops of the specific medicine every five minutes for one hour, then, if there be no relief, it is needless to try it further. We are not so sure that we would wait an hour to see whether it would relieve a patient in dire distress from cramp colic. Anodynes and local applications should be used in conjunction, but not carried too far.

"Wild yam is also a remedy of value in nausea and vomiting, with gastro-intestinal irritation, and in flatulent distension of the

stomach due to tea-drinking and such things. The patient complains of great distension, and belches constantly large quantities of more or less offensive gas. He is to a degree relieved by the belching. The gaseous distension need not be confined to the stomach, when dioscorea is indicated. It may extend throughout the abdomen, and be accompanied by sharp, cutting, griping pains and much rumbling. These pains may extend to the chest, arms and limbs, and the extreme misery of the patient be evidenced by a cold, clammy perspiration and marked exhaustion.

Such symptoms as these may be marked in cases of cholera morbus; in some cases of typhoid fever, when there is tenderness on pressure and tympanites; in the early stages of puerperal peritonitis, or even in after-pains; in diarrhea and dysentery of the child and of the adult; and in some cases of cholera infantum. There may or may not be in any of these cases more or less fever. The addition of gelsemium to the dioscorea usually relieves this complication, favoring relaxation and relief.

"Dioscorea is recommended as a superior remedy in the passage of gall-stones. It relieves the pain, reduces congestion and lessens the inflammation. It is also recommended in so-called 'hepatic indigestion,' and in cirrhosis of the liver. In the latter lesion it is said to delay the progress of the disease, and to be fully as efficient as the mercurials. In hepatic carcinoma it is said that the administration of dioscorea adds much to the anodyne effects of morphia, hence it is a good remedy.

"Dioscorea is an excellent remedy in chronic malarial troubles, when the above-mentioned symptoms predominate. It may be used alone or in alternation or conjunction with arsenic, quinine, nux, or any other indicated remedy.

"It is also said to exert some pain-relieving effect in facial neuralgia, gastralgia, pain in the uterus, and in painful and spasmodic action of the bladder and rectum, and in sciatica. In rectal diseases in which dioscorea is most efficient the discharge from the bowel is thin and yellow, and preceded by violent, twisting, colicky pains."

Dioscorea villosa is antispasmodic, diaphoretic and expectorant. In large doses it is emetic.

Indications.—Abdominal muscles contracted, when there is constant pain; colic, with sharp, cutting pains; pains in the abdomen, relieved by pressure or by supporting the abdomen; hepatic disorders, accompanied by irritability of the stomach; typhoid fever when there is tenderness on pressure and tympanites; pains radiating from the abdomen to other parts of the body, as to the back and arms.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 40 drops.

Usual Prescription.—℞ Dioscorea, gtt. x to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour or two.

Drosera Rotundifolia—Sundew.

Drosera is employed with good success in chronic coughs of a dry, irritating character. Its influence is most marked when the central nervous system is in an irritated condition. In whooping-cough and measles it affords much relief, and in the cough of phthisis it often proves useful.

"I use drosera as a specific in the cough attending and following measles, especially where there is dryness of the respiratory mucous membranes. An experience of twenty years with it, in a large number of cases, has given me great confidence in the remedy.

"We also use it in cases of whooping-cough, especially where there is dryness of the air-passages and much irritation of the nervous system. Whilst it is not a remedy for all cases of whooping-cough, it is a true specific in those to which it is adapted. I have often seen a serious case of the disease relieved in twenty-four hours, and an entire arrest of the cough in two weeks.

"We also employ it in cases of chronic cough, with dryness of the air-passages and nervous irritation, with much advantage. It makes little difference whether it arises from bronchial irritation, or inflammation, or phthisis, if associated with irritation of the basilar portions of the brain and pneumogastric." (Scudder.)

"Given a cough with *dryness, explosiveness* and *irritation,* and drosera will nearly always meet the case, no matter what the name of the disease. The mucous membrane is dry, little expectoration; the cough is spasmodic, often worse at night, with some sneezing and coryza, dryness of the throat and dyspnea. The irritation seems to be at the base of the brain and involves the cough center of the medulla oblongata.

Drosera is a favorite and a favored remedy in the cough of measles. Now and then we meet a case in which drosera does not touch the spot and relieve the cough, but these cases are infrequent. Many times we believe that drosera given directly after exposure and before the attack ameliorates the cough trouble of rubeola. It may be combined or alternated with any other remedy indicated.

"Drosera is also a whooping-cough remedy. Its application and relief to cases of this disease are not so general as in measles. But it will frequently relieve the distressnig paroxysms, and at

other times cut them short. There is no *specific* for the disease, but drosera is a specific for certain symptoms of this disease.

"Drosera is a reliable remedy for some cases of chronic cough, especially in those in which the cause is in the irritation of the cough center at the base of the brain. It is not a remedy for gastric cough, but it has some influence upon the bronchial mucous membrane, and relieves bronchial irritation, respiratory disturbances, and even the distressing cough of phthisis pulmonalis.

"From this general quieting action on the nervous system, drosera is recommended in certain cases of asthma, in incipient phthisis, in chronic bronchitis, and even in some cases of flatulent dyspepsia. The drosera patient may have pain in any part of the body, but it is more or less aggravated by motion and by paroxysms of coughing. Drosera as a cough remedy under these restrictions, has our highest commendation." (Bloyer.)

Drosera rotundifolia is tonic, antispasmodic, expectorant and nervine.

Indications.—Cough of measles; whooping-cough; bronchial irritation with cough similar to that of measles; coughs showing dryness of the air-passages and nervous irritation.

Dose.—Fluid extract, 1 to 5 drops; specific medicine, ½ to 5 drops.

Usual Prescription.—℞ Drosera, gtt. x to xxx; water, ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Echinacea Angustifolia—Hedge-hog Cane Flower.

The basic action of echinacea is believed to be on the fluids of the body, and that such action is antagonistic to the state usually referred to as "blood depravation" we have an abundance of evidence. Echinacea exerts an influence which opposes morbid accumulations in the fluids, as well as abnormal change in the fluids themselves. Bad blood and its consequence, a loss of vital power, are the most prominent conditions in which it is indicated. In diseases prone to assume a malignant character, such as carbuncle, septic ulcerations and abscesses, gangrenous conditions, sloughing erysipelas, stings and bites of insects and reptiles, its corrective action is most decided and unmistakable.

Wherever disease results from lack of vital force, from a tendency to morbific changes, from a depraved state of the fluids, from blood-poisoning, or from a tendency toward disintegration of tissue, echinacea should always constitute at least a part of the treatment.

In syphilis echinacea is a very efficient remedy which may be employed both internally and locally. The ulcers should be cleansed with a 25 to 50 per cent. solution, and thereafter kept constantly wet with the medicament by means of absorbent cotton.

Echafolta (which is simply purified echinacea) is the preparation of the drug which gives the most satisfactory results. The dose is the same as that of specific echinacea.

"It is now some ten years since this remedy was introduced to the medical profession, and in that time it has been thoroughly tested. My first experience with it was in cases of syphilitic sore throat, as a gargle, using the remedy freely. Its results were very satisfactory, seeming to have a general effect through absorption, as well as locally through contact. It was also used as a lotion in ulceration of the lower extremities with the greatest satisfaction.

"If you ask me to name the marked medical properties of the drug, I would say, first, that in depraved conditions of the body, with exalted temperature, it is, as Prof. Webster said a good while ago, a sedative. If you will place a few drops of echafolta on the tongue, you will speedily be conscious of a peculiar thrilling and pricking sensation affecting the tongue, which will at once remind you of specific aconite; besides this, its antiseptic properties are well vouched for. And, speaking in the language of the fathers, we might call it a corrective, correcting abnormal conditions of the fluids, and, both directly and indirectly, relieving and correcting such wrongs as ulceration, phagadena, sloughing, and other similar conditions, which may have a local origin, but have also for their perpetuation and foundation a systemic wrong. (Fearn.)

"Echafolta is the ideal remedy in the treatment of boils, carbuncles and bruises; not because of their name, but because we have the pathological condition which manifests itself in an edematous, doughy condition of the muscular tissue, and, under palpation, gives to the touch a sensation resembling the separation of the molecular adhesion of the subcutaneous muscular tissue, or a sensation to the touch like unto that where there is deeply burrowed pus. The pressure of the finger must be gradually and steadily made to elicit this sensation. (Ross.)

"An epidemic of ulcerative tonsillitis appeared in our community. Instead of phytollacca and the usual remedies I tried echafolta, and was surprised to see the results; a few doses relieved the pain and soreness of the throat, the fever began to subside, the ulcers to heal, the foul smell of the breath to disappear, and in two or three days they were well, where it usually took from four to ten days to complete the cure." (Swem.)

"My little boy was stung by what is commonly known in this part of the country as a stinging lizard, from which he suffered excruciatingly. I at once saturated some absorbent cotton with echafolta and bound it to the place. In less than ten minutes he was perfectly easy, and it gave him no more trouble." (Daniel.)

"The extraordinary powers of echinacea—combining essentially that formerly included under the terms antiseptic, antifermentative and antizymotic—are well shown in its power over changes produced in the fluids of the body, whether from internal causes or from external introductions. The changes may be manifested in a disturbed balance of the fluids, resulting in such tissue alterations as are exhibited in boils, carbuncles, abscesses, or cellular and glandular inflammations. They may be from the introduction of serpent or insect venom, or they may be due to such fearful poisons as give rise to malignant diphtheria, cerebro-spinal meningitis, or puerperal and other forms of septicemia. Such changes, whether they be septic or of devitalized morbid accumulations, or alterations in the fluids themselves, appear to have met their Richmond in echinacea. 'Bad blood,' so-called, asthenia and adynamia, and particularly a tendency to malignancy in acute and subacute disorders, seem to be special indicators for the use of echinacea.

"Outside of the claims made for this remedy by its introducer, which included many of the conditions for which it is now valued, it first attracted general notice as a remedy for septicemia, in which malady it appeared to promise more than any remedy previously in use. The reports of Dr. Hayes gave an impetus to the use of the drug in this direction; since which time physicians whose statements are valued have lauded it as a remedy in various forms of blood-poisoning. Thus it has been successfully employed in injuries complicated with septic infection. A crushed hand, thought to be beyond aid, with the intolerable stench of putrid flesh, was saved by the application of echinacea. It has given equally satisfactory results in alarming cases of venom infection, with great depression, from the bites of the rattlesnake, tarantula and other spiders, and from the stings of scorpions, bees, wasps, etc. Prof. Webster, among others, speaks highly of its action in slow forms of cerebro-spinal meningitis, using it as the basic remedy (in connection with other indicated drugs), because of its sedative virtues, controlling, as he believes, the vascular area concerned in the nutrition of the cerebro-spinal meninges, and for its effects upon the general circulation. The cases benefited were those characterized by a slow, feeble pulse, or at least a pulse not appreciably quickened, with the temperature scarcely elevated, and cold extremities. The evidences of cerebral disturbances were erratic. Headache, with a peculiar periodical flushing of the face, even

to the neck, was present, and, associated with these symptoms, dizziness and profound prostration. Prof. Webster was the first, we believe, to employ the remedy in this affection. He asserts that as a stimulant to the capillary circulation no remedy is comparable with it, and that it endows the vessels with a recuperative power or formative force, so as to enable them to successfully resist local inflammatory processes due to debility and blood depravation.

"While clinical eveidence is strong in support of the curative action of echinacea in diphtheria, the writer cannot but feel that, in some instances at least, the reports have been based upon mistaken diagnoses and upon non-malignant cases. He is forced to this view from a liberal use of the drug in several cases of a malignant type in which it utterly failed to accomplish the results desired. Non-malignant forms of diphtheria tend to recovery, and we should be careful about endorsing remedies as curative in such cases, lest we bring discredit upon a good remedy by making sweeping claims for it which cannot be substantiated when the drug is put to a test in the severer forms of the disease. Nevertheless, in these non-malignant cases it appears to expedite convalescence.

"In the various forms of tonsillitis it has given better results, particularly in the necrotic form, with dirty-looking ulcerative surfaces. It comes well endorsed as a remedy for that malignant form of quinsy known in some of the Western States as 'black tongue.' Echinacea will contribute much to the cure of various catarrhal affections of the nose, naso-pharynx and other portions of the respiratory tract. It is specially indicated by ulcerated and fetid mucous surfaces, with dustky or dark coloration and a general debilitated habit. Many patients who have taken echinacea for other purposes have remarked its beneficial effects upon catarrh, from which they were suffering at the same time. Chronic catarrhal bronchitis and fetid bronchitis have been signally benefited by echinacea, and it has done that which few remedies can accomplish, *i.e.*, it has overcome the stench of pulmonary gangrene, and if given early it is asserted to avert a gangrenous termination in pulmonic affections.

"Echinacea is in some respects a remedy for pain. It relieves the pain of erysipelas, and contributes largely to a resolution of the swelling when extensive, tense, and of a purplish-red hue. It is reported to have relieved the pain of cancerous growths, particularly when involving the mucous membranes, as cancer of the fauces. Prof. Farnum calls attention to the wonderful rapidity with which the odor of carcinoma is overcome by echafolta. He strongly recommends it as an application for cancer, and relates a case of mammary cancer long held in check by it. He also advises its internal administration in cancerous cachexia. So great is the confidence placed in this agent

by our foremost surgeons that they have been content to use it with sterilized water to cleanse and dress, after operations, discharging tubercular abscesses, gangrene, empyema with gangrene of the lung, appendicitis, and carcinoma of the breast and testicle (Farnum). Prof. L. E. Russell advises echafolta as a preventive of sepsis, giving it internally previous to operations, to act as an intestinal antiseptic; and locally as a corrective, to dress any traumatism showing signs of sepsis, and as a wash in abdominal and pelvic operations into which any organ has discharged septic contents. Phlegmonous swellings, old sores, erysipelas with sloughing phagedena, dissecting or surgical wounds, phlegmasia dolens, dermatitis venenata, and pus cavities should be treated with echinacea or echafolta, both locally and internally. A most remarkable case came under the writer's care in which a high fever with marked adynamia, associated with the development of cellular abscesses and a hemorrhagic diarrhea, yielded to echinacea and rhus aromatica. Other medicines did but little good until these remedies were brought into use. The abscesses were of a non-active variety, somewhat painful, but not excessively so; they numbered about ten or twelve at any given time in various parts of the body. The alvine discharges were passed involuntarily, except when kept under control by the fragrant sumach. The boy, whose age was but four years, lingered in this condition for over two months. Echinacea surely kept the child alive, for whenever the dose, which was ten drops every three hours, was lessened, the symptoms were greatly exaggerated. In spite of his low condition and the very unsanitary surroundings, recovery took place rapidly, as soon as the active symptoms subsided.

"Echinacea is highly endorsed as a topical dressing for malignant carbuncle. Painful mammitis has been very successfully treated with it, and, used as an injection, it relieves the pain and inflammation in gonorrhea. Several physicians have used it in syphilis." (Felter.)

"In *syphilis* echinacea will be found to be a grand remedy. I have used it in combination with so-called alteratives; my cases improved so nicely that I gradually eliminated all other remedies until to-day I depend on echinacea almost alone, and I firmly believe the day is not far distant when this grand remedy will be the syphilitic savior. No drug will antagonize this blood poison as rapidly and completely as echinacea, and I believe with no after-effect or dangerous disturbances.

"Internally the largest tolerant doses should be given, together with local use. A favorite ointment is made: ℞ Echinacea tincture, ℥ss; lanoline, ℥ij, or as large a percentage of echinacea as the lanoline will take up. In all cases of chronic skin disease of a syphilitic nature, the internal and local use of this remedy,

when once tried intelligently, will not be forgotten. Dr. Goss recommends this remedy very highly in both the secondary and tertiary stages of syphilis. If it has any antisyphilitic virtues it certainly merits a careful investigation.

"I have recently treated a case of syphilis in the second stage with echinacea. The eruption was general; the throat symptoms were not marked, but progressing, as was also glandular involvement. Nearly all the hair had fallen out, and the patient was desperate. I gave in plain alterative syrup, one-half its quantity of echinacea. Of this he took one or two teaspoonfuls four times daily. The eruption began to fade after three months, and in six months there was no apparent trace of the disease. He is now apparently as free from the disease as he ever was, and has had but few disagreeable effects." (Forbush.)

"Experiments have been made with echinacea to determine its immediate influence upon the fevers caused by the continued absorption of septic material such as typhoid fever, puerperal fever, and the fevers of the after stages of diphtheria, and in all instances it was shown that the influence upon the destructive organisms began at once. In several cases reported, where the special sedatives were not given and this agent used, the temperature has declined from one-half to two degrees within a few hours after its use has begun and has not increased until it was discontinued. It then slowly increased toward the previous high point until the remedy was again taken, when a decline was soon apparent. The drops in temperature produced by this remedy are not abrupt like those following the curetting of a septic womb, or the removal of a quantity of septic material often causes, but it effects almost immediately cessation of germ development and a steady restoration from this pernicious influence. In treatment of typhoid fever in Cook County Hospital it has been used very largely in the last three years, and the records in that institution show that twenty-one days is the extreme length of the fever and the mortality is the lowest ever known. In many cases, taken early, the fever has been limited to fourteen days without delirium." (Cushing.)

"A boy twelve years of age was bitten on the upper lip by some poisonous insect and great swelling and pain with an erysipelatous redness, spread up to the eyes. The first physician who saw him thought an ulcerated tooth was the cause of it, and sent him to a dentist, who extracted the one supposed to be the cause, but it was sound, and the pain and swelling continued to grow worse. I was then called, and recognizing it as blood poisoning, made a solution of specific echinacea by adding two drachms to four ounces of water, and gave a teaspoonful every two hours. There was manifest improvement in a few hours, and complete recovery in three days. Nothing else was used except a warm

flaxseed poultice over the central seat of the pain. I now believe the case would have been sooner over if the doses had been repeated oftener." (Kilgour.)

Echinacea angustifolia is alterative, stimulant, tonic, sedative and antiseptic.

Indications.—Tongue coated black; putrescent odor from excess of broken-down material being eliminated from the system, as in scarlet fever, diphtheria, spinal meningitis and typhoid fever; strumous diathesis; old sores and wounds; snake bites and bites of rabid dogs; tendency to boils and carbuncles; foul discharges from weakness and emaciation; deepened, bluish or purplish coloration of the skin or mucous membranes, with a low form of inflammation; dirty, brownish tongue; tendency to the formation of multiple cellular abscesses of semi-active character, with marked asthenia. Locally: As a cleansing wash in surgical operations; to deodorize carcinomata; gangrene.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 60 drops.

Usual Dose.—10 to 20 drops every three or four hours.

Elaterinum—Elaterium—Squirting Cucumber.

Elaterium, in medium doses, is the most powerful hydragogue purgative known. It acts as a violent purgative, whether given internally or injected subcutaneously, producing abundant watery evacuations, attended with much griping pain and great prostration. It greatly increases the salivary, gastric and intestinal secretions, as well as those of the liver and pancreas. It is indicated where profuse serous discharges are necessary, as in some cases of congestion of the brain, ascites and chronic nephritis. It should never be employed in inflammatory conditions of the gastro-intestinal tract, nor in pregnancy. It is contraindicated in all debilitated conditions. Overdoses are poisonous, and cause insensibility, blindness, and an inflammation of the stomach and bowels that might cause death. It is a remedy only for plethoric cases and for those who are fully able to endure some depletion.

Elaterium in small doses possesses a power positively curative in inflammation of the neck of the bladder, especially where there are more or less constant painful sensations in the region of the neck of the bladder, and when after micturition there is a violent

cramp-like aching in the parts, often extending over the whole pelvic region and thighs. The use of elaterium in small doses for chronic cystitis, originated solely with the Eclectics. Prof. John King pronounced it a specific for this malady. Generally, when there are violent cramping pains about the neck of the bladder, and the urine is expelled in gushes, and with much force, or when there is passed much mucus, or muco-pus, together with great tenesmus, tenderness, soreness, dragging and weight in the pelvis and perineum, elaterium, in very small doses, is not excelled by any other remedy.

"Elaterium in fair-sized doses is possibly the most active hydragogue cathartic known. It produces enormous discharges of water from the kidneys and the bowels, and, because of this action, it is a prominent remedy in the treatment of dropsy. It should not be given in the dropsy due to cardiac trouble, but in the dropsy due to a 'big liver.' When there is torpidity of the bowels and kidneys, the tongue heavily coated, and there is every evidence of the need of a cathartic, give elaterium with confidence that it will do well.

"It is an efficient remedy in large doses in the treatment of uremic convulsions, or convulsions due to suppression of urine and feces after scarlet fever, etc. The free flow of water from the bowels assists in washing the excess of urea from the blood."

Elaterium is hydragogue cathartic and diuretic. In very large doses it causes dangerous irritation of the mucous membranes, and even fatal inflammation.

Indications.—Chronic cystitis, with violent cramping pains; inflammation of the neck of the bladder, with deep soreness and passage of pus or muco-pus; dropsies in the plethoric and vigorous; uremic convulsions; convulsions from suppression of urine; violent cramping pains about the neck of the bladder.

Dose.—Elaterium, 1-30 to 1-12 grain; specific medicine, 1 to 20 drops.

Usual Prescription.—℞ Specific elaterium, gtt. v to x; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Epigæa Repens—Trailing Arbutus.

Trailing arbutus is successfully employed in cases where there is an excess of uric acid. In the nauseating backache met with in cases where the crystalline constituents of the urine are not well dissolved and washed out of the tubules it is also a potent

remedy, and where there is renal sand or gravel in the bladder it has a corrective influence. In cases in which the urine is dark and heavy, with irritation, causing congestion of the kidneys, epigæa is used with markedly beneficial effects, and when precipitated solids irritate the bladder and induce cystitis, with thickening of the walls and the formation of pus, it constitutes a most valuable remedial agent. In diseases of the kidneys and bladder the dose should be administered in about an ounce of hot water—not warm water.

"Epigæa is generally classified as a tonic and astringent diuretic, and there are to be found in any general practice of any size a great number of cases in which epigæa may be used with advantage to both patient and physician. They are of a chronic nature. The acute symptoms of irritation have given way to atony and relaxation. There is debility and backache. The urine is usually heavily loaded with mucus, or in some cases it is bloody, and in others more or less purulent.

"Epigæa should be studied in cases in which the common 'brickdust' deposits in the urine are a noticeable feature. It may be given alone or alternated with one of the potassium salts, like acetate or bitartrate, always well diluted. An abundance of water is a diluent of the urine and renders the precipitated solids less irritating. The relief it quickly affords in these cases has gained for it the name 'gravel plant.' About one-half of the patients coming to you with these troubles will tell you that they have the 'gravel.' Some physicians whom we know well find this term very satisfying as well as elastic when telling their patients what ails them. The books will tell you that epigæa is an excellent remedy in the uric acid or lithic acid diathesis. It is an excellent remedy, and in action very much like uva ursi and buchu. In astringency it is less active than the latter, and more active than the former." (Bloyer.)

Epigæa repens is diuretic and astringent.

Indications.—Irritation and increased secretion of mucus in affections of the genito-urinary organs; purulent discharge from urinary organs; lithic acid gravel.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Dose.—5 to 20 drops every two to six hours.

Epilobium Angustifolium—Willow Herb.

This agent exerts a specific influence upon the intestinal mucous membrane, relieving irritation, and promoting normal

function. It is, therefore, a good remedy in acute diarrhea, dysentery and colic. In chronic diarrhea with large passages of half-digested food it has given excellent results, and in cholera infantum it constitutes an efficient medicament. In the diarrhea of typhoid fever it exerts a controlling influence over the discharges and quiets gastro-intestinal irritation.

"I have prescribed epilobium to quiet the irritation and check the diarrhea in typhoid fever, with marked benefit.

"It is especially valuable, however, in chronic diarrhea and dysentery; sometimes effecting cures where all other means had failed. Thus, I employed it extensively in the treatment of the chronic diarrhea during the civil war, and with a success not to be obtained from other remedies. I do not pretend to account for its action, but its curative influence is well established." (Scudder.)

Epilobium angustifolium is tonic, astringent, demulcent and emollient.

Indications.—Diarrhea of a watery character; diarrhea with colicky pain; feculent discharges with tenesmus; chronic diarrhea with harsh, dirty appearing and contracted skin; cholera infantum, with greenish discharges; diarrhea of typhoid fever.

Dose.—Fluid extract, 10 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—10 to 20 drops.

Equisetum Hyemale—Scouring Rush.

This is a useful remedy in suppression of urine from any cause, and it is of special value in dropsy when the urine is scanty, of high specific gravity and dark in color. In cases of irritable bladder with severe tenesmus, it exerts an influence which is unmistakably soothing, and in nocturnal incontinence of urine in children its action is often curative.

Equisetum hyemale is diuretic and astringent.

Indications.—Suppression of the urine; dysuria; irritability of the surfaces of the urinary tract; dropsical conditions; gravel and irritation of the urinary organs.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Dose.—10 to 20 drops.

Ergota—Ergot—Spurred Rye.

The abnormal conditions in which ergot is usually employed are not numerous, and yet the field over which its therapeutic action is energetically exerted is far from a small one. In fact, it is so extensive that it covers all wrongs of life which require a tonic or contracting influence over unstriped muscular fiber.

In shock, no matter how produced, ergot is of the utmost value. In severe cases it should be administered hypodermically. In the collapse often seen in cholera infantum it is of frequent usefulness. In all cases showing a pale, cool, relaxed skin, bathed in cold perspiration, the mucous secretions being also increased, the pulse soft and easily compressed, and both rapid and feeble, ergot constitutes a medicament of marked curative power. In exhaustion from heat it is an efficient remedy, and in delirium tremens with capillary relaxation it has a soothing and quieting influence. Taken before an anesthetic, it is said to modify the after-effects, control retching and lessen vomiting.

In cerebral apoplexy from vascular rupture ergot contracts the torn vessels and controls the hemorrhage. It lessens the blood in a congested part and thus prevents inflammation, and it is one of our most efficient remedial agents in cerebral and spinal congestion. In congestion of the stomach, which so often causes nausea, retching and painful vomiting, its exhibition affords much relief, and in congestion of the bowels, accompanied by pain, cramps and watery diarrhea, its curative effect is promptly manifested. It is also successfully employed in congestive dysmenorrhea.

In night sweats, drooling of teething infants, bronchorrhea, chronic diarrhea, polyuria, menorrhagia and the excessive secretion of milk, beneficial results are often obtained from the judicious use of ergot.

In hemorrhages, especially hemorrhage of the bowels from typhoid fever or chronic diarrhea, hematemesis, hematuria and epistaxis, ergot is a remedy of decided restraining power. In profuse hemorrhages, when prompt action is necessary, it should be administered hypodermically.

Ergot has been used in cancerous conditions with very gratifying results. A writer who has extensively employed it in cancer

says: "I can think of nothing more suited to the indications—that of diminishing vitality, vascularity and capillary circulation—than ergot." Another writer says that pulverized ergot spread thickly on a cancer will convert the morbid growth into a slough. In one of his cases ergot, after having been applied two days, made it easy to remove the cancer as a dead mass, and left the healthy tissue untouched. It is also claimed that the long continued use of ergot will cure uterine fibroids.

In obstetrics ergot is a well known medicament, and it is often employed in such cases when it does more harm than good. In the first stage of labor ergot should never be employed, excepting, perhaps, when there is dangerous accidental hemorrhage or partial placenta previa. Its careful use may then be justified. The tonic contractions which ergot produces prevent the dilatation of the cervix, cause it to become rigid, and favor its subsequent laceration. It may also bring about a condition likely to result in the rupture of the uterus or perineum, or the death of the child. In the second stage of labor, when there is uterine inertia, it may sometimes be administered as a means of preventing dangerous post-partum hemorrhage from uterine atony, but even under these circumstances it should never be employed if there is the slightest mechanical obstacle to delivery, nor if the head is high up in the pelvic cavity. It is quite a common practice to administer a dose of ergot just before the birth of the head, in order to give strong contractions at the delivery of the placenta, but it is not a wise procedure, for it is liable to cause "hour-glass contraction" or retention of the placenta. A good rule to follow is that of an eminent obstetrician, who said: "As long as the uterus contains anything, be it child, placenta, membranes or clots, never administer ergot. First empty the uterus and its contents." Some physicians always give a dose of ergot as soon as the placenta is delivered, but I know of no valid reason for doing so. In obstetrics I never employ ergot unless there is excessive hemorrhage at the completion of labor, and in a practice extending over more than a quarter of a century I have had but three cases of severe post-partum hemorrhage. One who knows how to judiciously employ his hands need have but little fear of hemorrhage in the practice of obstetrics.

The claim of some writers that ergot does not influence the

uterus unless labor has actually commenced is not in accord with the experience of most practitioners of medicine.

"While ergot has a wide range of action, its every therapeutic possibility is to be explained by its influence upon a single type of tissue, *unstriped muscular fiber*. We may summarize the action of ergot thus: It imparts tonicity to, and causes contraction of, unstriped muscular tissue.

"And what is the distribution of this kind of tissue? It comprises the muscular coat of the arteries, veins and lymphatics, but not the heart; the muscular layer of the skin and mucous membranes, the muscular portion of the trachea and bronchi, alimentary tract below the middle third of the esophagus, including the gall bladder and common duct, the pelvis of the kidney, the ureters, bladder and urethra, the generative organs of both male and female, the iris, Wharton's duct and the capsule and trabeculæ of the spleen.

"Thus is mapped for us the sphere of its action, and a careful estimate of the results of stimulating the contraction of these various organs and tissues will suggest the *rationale* of the most widely diversified curative action of ergot, and point possibly to yet untried uses of the remedy. Nor is it essential to a clear comprehension of the therapeutics of ergot that we be able to say if it have a direct action upon the muscle, or if it be indirectly through its nerve supply, though it is probably the latter, as it is known that the blood-vessels are under the control of vasomotor nerves, and ergot is, furthermore, known to impress the motor centers to the extent of inducing convulsions when given in toxic doses. With no other remedy, perhaps, is it more true that the specific indications for its use are confirmed by the physiological action of the drug.

"Broadly speaking, the organs mentioned as possessing unstriped muscular tissue may be conveniently classified into two distinct groups, which cover the entire range of action of ergot, (1) the organs of circulation, and (2) the remaining hollow viscera.

"Bearing in mind that the distribution of the unstriped fiber in the blood-vessel is in its circular coat, its contraction, as may be seen, produces a lessening of the diameter of the vessel—a narrowing of its lumen. Again, bearing in mind that the most liberal distribution of muscular tissue is in the arteries, and furthermore, that it increases inversely as to size of the vessel, it becomes readily apparent that the action of ergot upon the blood-vessels is very largely its action upon the arterioles and smaller arterial trunks alone.

"An inevitable result of thus contracting the peripheral circulation is to dam back the blood stream, thus raising blood pressure and putting more work upon the heart. Following the

use of ergot, it is true the heart's action becomes slower and more forcible, from which it has been assumed, though erroneously I think, that ergot exerts a direct tonic action upon the cardiac muscle. A moment's reflection will show that the modified heart action is but the logical sequence of the increase in blood pressure, in keeping with Marey's law; and thus it is seen that the action of ergot upon the circulation is its action upon the blood-vessels only. The heart does not possess unstriped muscular fiber.

"The therapeutic results derived from the action of ergot upon the circulation are brought about either, (1) directly by its action in contracting the vessels, as in the relief of hemorrhage, checking mucous fluxes or undue glandular activity; or, (2) indirectly by increasing blood pressure, as in the relief of shock and heat exhaustion, or by overcoming the pressure upon extra-vascular tissue, as in the relief of congestive migraine and dysmenorrhea.

"As elastic tissue predominates in the blood-vessels of the lungs proper, while muscular tissue is relatively scant, and as these vessels are not supplied with vasomotor nerves, it is hard to conceive how ergot could influence them to contract, hence its doubtful utility in hemoptysis, as attested by so many clinicians, though of unquestioned value in many other forms of hemorrhage." (Conklin.)

Ergot is parturient, hemostatic and stimulant. In very large doses ergot causes acute poisoning, and sometimes death. Its long continued use has resulted in gangrene of the extremities and other wrongs.

Indications.—Cold, clammy perspiration; relaxed skin with soft, feeble, compressible pulse; rapid pulse with a rapid, fluttering action of the heart, as often met with in cholera infantum, cholera morbus, congestive chill and typhoid fever; delirium tremens with capillary relaxation; insomnia caused by cerebral hyperemia; chronic subinvolution with metrorrhagia; bronchial hemorrhage, epistaxis, bleeding gums, hematemesis, hemorrhage of the bowels; capillary hemorrhage in general; excessive lochial and catamenial discharges.

Dose.—Fluid extract, 5 to 60 drops; specific medicne, 5 to 60 drops.

Usual Prescription.—℞ Ergot, gtt. x to ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Eriodictyon Glutinosum—Yerba Santa.

This remedy has been highly recommended as a stimulant to the respiratory tract. In pharyngitis, chronic laryngitis and bronchitis it has often been used with great advantage, and in broncho-pulmonic catarrhal affections it has yielded very satisfactory results. In chronic humid asthma, with profuse expectoration, thickened bronchial membrane and impaired digestion, it is of some value, and in coughs characterized by copious and easy expectoration it is a good remedial agent. It also exerts a favorable influence in catarrhal gastritis.

Eriodictyon glutinosum is stimulant and expectorant.

Indications.—Bronchial affections and coughs, with abundant and easy expectoration; chronic catarrhal gastritis; catarrh of the bladder; atonic condition of the mucous membranes of the respiratory organs.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 20 drops.

Usual Prescription.—℞ Eriodictyon, gtt. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour.

Erigeron Canadense—Canada Fleabane.

This old remedy constitutes a valuable medicament in many wrongs of life. In diseases of the kidneys and bladder, especially when a tonic and stimulant action is desired, it is used with gratifying results. In albuminuria much benefit is derived from its employment, and in diabetes insipidus it exercises a restraining influence. In painful diseases of the kidneys and bladder its action is decidedly corrective, and in chronic nephritis and chronic cystitis it is deemed a remedial agent of great value. It is also a favorite remedy in the later stages of gonorrhea, gleet and urethritis. In dysuria of the child or adult erigeron affords much relief, and in chronic catarrhal affections of the genito-urinary organs of the female, especially where there is a profuse discharge, it is often useful. In chronic cough with much expectoration it exercises a quieting influence, and its astringency is of marked benefit in diarrhea and dysentery, as well as in cholera infantum.

The oil of erigeron is an efficient remedy in passive hemorrhage, whether from the mouth, nose, uterus or urinary tract.

"In practice the oil of erigeron is not our first choice as a remedy in the general treatment of passive hemorrhage. For some years we have depended absolutely upon very small doses of specific aconite and ipecac, and we have no reason to seek other remedies, as these have never disappointed us. However, should we meet a case of hemorrhage in which the flow of blood was so profuse that little absorption was taking place in the alimentary tract, and there was a demand for *immediate* cessation of the hemorrhage, erigeron would be the remedy. It is not the equal of ergot in post-partum hemorrhage, and perhaps in some other special cases we might name superior remedies; but in slow bleeding use erigeron. Prof. Hare has said: 'Erigeron is by far the best remedy we have for uterine oozing, or show.' So it is in some cases of menorrhagia, metrorrhagia, etc. In hematemesis, and in hemoptysis, and in persistent hemorrhages from the bladder and in the epistaxis that seems continuous, oil of erigeron has no superior. In the great gushes of blood that sometimes take place from the lungs or stomach it is the equal of almost any other remedy. We know of no reason why it should not be given in combination or in alternation with ergot or other so-called astringent remedies.

"The specific medicine erigeron has an additional quality. It is tonic, astringent and diuretic. Its field of action is quite different. We do not recommend it so much as a hemostatic. Its chief characteristic, or its chief indication, is a diseased condition of the mucous membranes, in which there is a free discharge. These qualities render it an efficient remedy in diseases of the kidney and bladder. It deserves consideration and study in the treatment of stubborn cases of vesical irritation or cystitis, in nephritis and in dropsy. In many cases of diabetes and albuminuria there is great promise in specific erigeron. It has been highly recommended for the relief of vesical irritation that accompanies or is due to stone in the bladder, and in many cases of distressing dysuria in children it acts quickly and permanently.

"It is of great value in bronchial affections accompanied by free discharge, like severe cough with a bloodly expectoration. The cough of phthisis, together with excessive expectoration, are both lessened by specific erigeron. It has been flatteringly mentioned as a remedy in the treatment of diarrhea and in leucorrhea. For these purposes the older Eclectics frequently employed a decoction of the herb. Erigeron has been praised as a remedy in the later or subacute stages of gonorrhea, when there is burning, smarting, dribbling urination, painful micturition, and the urine is quite offensive both as to appearance and odor."

Erigeron canadense is tonic, stimulant, astringent and diuretic.

Indications.—Abnormal conditions of mucous membranes attended with free discharge; painful diseases of the kidneys and bladder; passive hemorrhages from any organ.

Dose.—Fluid extract, 5 to 60 drops; oil, 5 to 10 drops on sugar; specific medicine, 5 to 30 drops.

Usual Prescription.—℞ Erigeron, ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Eryngium Aquaticum—Water Eryngo.

Eryngium lessens irritation of the genito-urinary organs of both sexes, and is, therefore, a frequently indicated remedy. In acute or chronic nephritis it is a very efficient remedial agent, and in cystic irritation it is employed with marked success. In urethritis, whether simple or gonorrheal in origin, it constitutes a medicament of curative power, and in urethral and prostatic affections generally it may well constitute a part of the treatment. In gonorrhea, gleet and spermatorrhea it is of considerable value, and in leucorrhea and dysmenorrhea, especially when of nervous or reflex origin, it affords much relief. In wrongs of life, characterized by a too frequent desire to urinate, but a few hours of sleep being possible at any time on account of the cystic or urethral irritation, eryngium exerts a restraining power unequaled by any other medicament. It is also a remedy of usefulness in passive dropsy, and when there are mucous or pus deposits in the urine it acts in a corrective direction. Eryngium is sáid to be an unexcelled remedy in spasmodic stricture of the urethra.

Besides its specific action upon the genito-urinary organs, it has been recommended in bronchial inflammation with profuse exudation, laryngitis and pharyngitis. It has also been used with advantage in atonic dyspepsia with gastric irritation, as evidenced by red tip and edges of the tongue, nausea and tenderness on pressure, and in the diarrhea of teething children characterized by tenesmus and mucous discharges, it is deemed a remedy of usefulness.

"This agent removes irritability of the urinary organs. It is specifically indicated in burning or itching in any part of the

urethra. It is a good remedy in passive dropsy, giving tone to the debilitated organs and stimulating absorption.

"In female disorders, as leucorrhea, dysmenorrhea, etc., it is a very good remedy. It is of some value in gonorrhea, gleet and spermatorrhea, chiefly to control the urethral irritation.

"In troubles of the respiratory organs, with excessive secretion, it increases the tone of mucous surfaces and stimulates them, thus lessening their secretion. For this purpose it is valuable in some cases of bronchitis.

For snake bites or stings of insects, use a compress of the bruised root on the wound, and administer the infusion internally. It acts as a tonic in atonic dyspepsia. Its principal use, however, is to relieve irritation of the urinary organs." (Locke.)

Eryngium aquaticum is diuretic, stimulant, diaphoretic and expectorant. In large doses it is emetic.

Indications.—Frequent desire to urinate; burning sensation or burning pain in the urethra or bladder; pain in the bladder, extending to the loins; catarrh of the bladder; scanty urine; uterine irritation accompanying uneasiness in the bladder; irritable condition of the bladder and urethra in old people.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Eryngium, gtt. x to xxx; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Erythroxylon Coca—Coca.

Coca is a useful remedy in many cases of neurasthenia, and in cases where exhausting mental work has resulted in morbid depression of spirits it promptly exerts a beneficial influence. In despondency, as well as in nervous irritability, it constitutes a medicament of corrective power.

Erythroxylon coca is aphrodisiac, emmenagogue, tonic, stimulant and diuretic. In very large doses it causes cerebral congestion and intoxication.

Indications.—Mental or physical exhaustion; gastro-enteric debility; enfeebled conditions of the nerve centers; difficult breathing due to functional diseases of the heart; hysteria; states of depression, with a feeling of weariness.

Dose.—Fluid extract, 1 to 20 drops; specific medicine, 1 to 20 drops.

Usual Prescription.. ℞ Erythroxylon, ℥i; water ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Eucalyptus Globulus—Blue Gum Tree.

Eucalyptus is valued highly as a stimulant expectorant. In fetid bronchitis, bronchorrhea and pulmonary gangrene it has been employed with much success, but in acute affections of the broncho-pulmonary membrane it is contraindicated. It is many times useful as an antiseptic in cystitis and pyelitis. A solution of the oil of eucalyptus is used as an antiseptic inhalation in diphtheria.

The oil or tincture of eucalyptus, well diluted, may be used as a deodorizing application in foul-smelling ulcers and wounds. The oil is used locally as a lotion, inhalation or gargle.

Eucalyptus globulus is tonic, stimulant, expectorant, diuretic and antiseptic. In large doses it is a mild antiperiodic.

Indications.—Nervous affections with coldness of the surface and cold perspiration; sensation of coldness and weight in the bowels; coldness of the extremities; chronic catarrhal affections of the respiratory organs, genito-urinary organs and the gastro-intestinal tract.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops; oil, 1 to 5 drops.

Usual Prescription.—℞ Eucalyptus, gtt. xxx to ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Eugenia Chequen—Cheken.

The indications for this remedy are often seen in colds, bronchitis and pneumonia. It acts as a tonic and stimulant to the mucous membranes, making respiration more free, and restoring the membranes to normal activity. Chronic cases appear to derive more benefit from the medicament than acute cases do. In chronic bronchitis and winter cough it is especially useful, and in pleurisy with effusion it has been employed with success.

Eugenia chequen is tonic, stimulant, expectorant, diuretic and antiseptic.

Indications.—Purulent inflammation of the bronchial tubes; acute and chronic bronchitis; paroxysmal cough with thick yellowish expectoration and shortness of breath on exertion; winter cough; chronic cough with thick and sticky expectoration; hacking cough; sympathetic cough occurring in adults who are associated with children having whooping-cough; catarrh of the bladder.

Dose.—Fluid extract, 20 drops to 2 drachms.

Usual Dose.—20 to 30 drops.

Euonymus Atropurpureus—Wahoo.

Euonymus stimulates the nutritive processes, and in some cases improves digestion. It exerts an influence which makes for improvement in malarial diseases, and may be employed in such cases with assurance of marked advantage. Its chief field, however, is in atonic states of the gastro-intestinal tract, in which it stimulates digestion and the nutritive processes. When indigestion and atonic dyspepsia depend upon hepatic torpor, or when following malarial fever, the action of euonymus is decided.

Euonymus atropurpureus is tonic, laxative, alterative, diuretic, cholagogue and expectorant.

Indications.—Yellowish discoloration of the tongue; chronic malarial poisoning; hepatic and gastro-intestinal abnormal conditions, when there is depression of function.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 30 drops.

Usual Dose.—10 to 20 drops.

Eupatorium Aromaticum—White Snakeroot.

Eupatorium exerts a marked influence upon the brain, relieving irritation and promoting normal activity. It also influences all of the functions governed by the sympathetic. Indications for eupatorium are often seen in pneumonia, and in pleurisy it is a remedy of frequent usefulness. In hysteria marked benefit is often derived from its exhibition, and in chorea it is deemed a remedy of controlling power. In aphthous diseases and in stomatitis it is also used with advantage.

Eupatorium aromaticum is antispasmodic, nervine, diaphoretic and expectorant.

Indications.—Restlessness and morbid watchfulness in the advanced stages of fevers; debility and irritation of the nervous system.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 30 drops.

Usual Dose.—5 to 20 drops every two to six hours.

Eupatorium Perfoliatum—Boneset.

Boneset increases functional activity of the skin, and to a less extent that of the kidneys. In small doses it stimulates the sympathetic nervous system and improves all the vegetative functions. It has often been employed with the most gratifying results in rheumatism, and in various inflammations it is deemed a useful remedial agent. Intermittent and remittent fevers also come within its curative range. Eupatorium relieves the cough of measles, as well as that cough peculiar to some old people. It is also a good remedy for colds, with pain in the chest.

Boneset is an excellent remedy in ague which cannot be cured with quinine. In ordinary cases of recent ague it is not to be used, but in cases where the disease comes on irregularly this is the remedy. It is also adapted to those cases in which the chill and fever is slight, the skin dry, and not followed by sweating, and with pains in the bones, oppression in the chest, a great thirst, and in cases where there is heat lasting all day, but followed by a slight perspiration at night. Vomiting in ague is an indication for this agent, especially if much bile is vomited.

Eupatorium may be used for its direct tonic influence upon the stomach. It will improve the appetite and restore tone to the digestive organs. It will restore the appetite when destroyed by alcoholic excess.

Eupatorium perfoliatum is tonic, diaphoretic, alterative, resolvent and laxative. In large doses it is emetic and cathartic.

Indications.—Deep-seated soreness of the muscles of the back and limbs; sweating during fever; severe cough associated with deep-seated muscular soreness; aching in the bones and feeling as if they were broken; great soreness and aching of entire body; hoarseness and cough, with great soreness of the larynx and chest.

Dose.—Fluid extract, 10 to 60 drops; specific medicine, 10 to 60 drops.

Usual Prescription.—℞ Eupatorium perfoliatum, gtt. x to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour.

Eupatorium Purpureum—Queen of the Meadow—Gravel Root.

Queen of the meadow exerts a special influence upon the genito-urinary organs. It increases the volume of the urine, and is,

therefore, a remedy of great usefulness in the treatment of various forms of dropsy. In functional derangements of the kidneys and bladder it has long been regarded as one of our most reliable remedial agents, and in ovarian and uterine atony it exercises an influence which makes for normal activity. It is also a good remedy for vesical irritation. While it is a stimulating tonic and antilithic, its greatest value is manifested in diseases of the genito-urinary tract. As a remedy in gastro-intestinal irritation, however, it is often employed with very gratifying results.

"It owes its common name—gravel root—to its power over that condition giving rise to renal and vesical concretions, whether in the finer form of gravel or the larger calculi. Its efficiency is increased by administering it in hot water. Difficult and painful micturition, with frequent desire to urinate, the passage being seemingly obstructed; pain and weight in the loins, extending to the bladder, the urine being scanty, high-colored, or mixed with blood or solids; in chronic irritation of the bladder with a sense of heat, and the urine cloudy and loaded with mucus —these are all direct indications for specific gravel root. In these troubles the skin is usually hot, dry and constricted. Gravel root relieves incontinence of urine when due to irritation, and is one of the most serviceable remedies in the uric acid diathess."

"Queen of the meadow is a good remedy when the patient suffers from painful urination, with frequent desire to pass urine, the act being accompanied with a sensation of obstruction. The condition is one of difficult and painful micturition. In the treatment of dropsy it is one of our best remedies. In anasarca dependent upon a failure of the kidneys to act, it is especially valuable. Here we may remove the effusion by a hydragogue cathartic, but if renal remedies are neglected the effusion returns as before. This remedy stimulates the absorbents and restores the lost tone of the kidneys. If the patient is not debilitated, give this agent in doses of from five to ten drops of the tincture in a teaspoonful of water every three hours. The dropsy following scarlatina is especially benefited by its exhibition. It is a good drug when the patient complains of pain in the region of the kidneys extending to the bladder, with scanty, high-colored urine. If the vascular excitement is marked, give it with aconite or veratrum. The urine passed may be mixed with solids or blood. It is valuable in chronic irritation of the bladder, with mucous discharges in the urine and heat in the region of the bladder, the urine leaving a deposit of mucus in the vessel. Shooting pain in the urethra, tenesmus and frequent micturition, are indications for its use. It is a good remedy in recent troubles

of the prostate gland after the active symptoms have passed. Give of the tincture five drops every three hours.

"It affords good results in cases of strangury resulting from irritating diuretics, or caused by a fly blister. The following always gives relief: Inject thirty drops of laudanum in starch water into the rectum, and then give the infusion of eupatorium freely. Keep the patient warm. If this is not sufficient, give the patient a hip bath. In incontinence of urine in children resulting from chronic irritation of the bladder, a small amount of urine causing contraction of the bladder and the expulsion of its contents, give five drops of specific eupatorium purpureum three times a day, giving the last dose at bedtime.

"In albuminuria it is one of the best remedies we possess. It is good for quieting irritability of the bladder during pregnancy, the urine being frequently voided in small quantities. Dose, five drops, or give the infusion. This remedy always helps the patient and many times removes the trouble. Diabetes insipidus is also benefited by its action.

"This remedy influences the reproductive organs of both male and female, more especially the latter. It is tonic to the uterus in atony or chronic irritability of this organ. It is of service given in four- or five-drop doses three times a day to prevent abortion due to debility in chronic metritis, prolapsus, retroversion and all troubles of the uterus of this nature. It is a good remedy in chronic amenorrhea with constant leucorrheal discharges and marked debility; use it in the form of an injection, together with some astringent. In some cases of pregnancy, with constant desire to void urine, attended with cough, the urine passing with each effort of coughing, this remedy given in teaspoonful doses of from fifteen to twenty drops in four ounces of water generally gives relief. If the patient is very nervous, associate it with pulsatilla.

"It is a good agent in impotency of the male. It is also used for its influence upon the respiratory organs. Chronic cough, with atony of the cirulation, is benefited by its use, as is also whooping-cough when unduly prolonged. It has given good results in asthma and chronic catarrh." (Locke.)

Eupatorium purpureum is diuretic, tonic, stimulant and astringent.

Indications.—Pain in the region of the kidneys; urine scanty and passing a few drops at a time; smarting and burning in the urethra; ovarian and uterine atony; renal dropsy.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Eupatorium purpureum, ℥ii to ℥iv; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Euphorbia Corollata—Milkweed.

Milkweed exercises a direct influence upon the mucous surfaces, relieving irritation and promoting functional activity. In small doses it improves digestion, both stomachic and intestinal, and tends to overcome constipation and irregularity of the bowels. In inflammatory conditions of the intestinal canal it is a very efficent remedy.

"In medicinal doses it relieves gastric irritation and assists digestion. Use it where the tongue is furred and there is a bad taste in the mouth, loss of appetite and constipation. Small doses are beneficial in dysentery and diarrhea with large evacuations, accompanied by tenesmic pains. It is a remedy also for cholera morbus and cholera infantum. It relieves aphthous conditions in children, the trouble being associated with vomiting and diarrhea. Administer it in the diarrhea of consumption.

"It is a good remedy when indicated. Its range of action is chiefly confined to the gastro-intestinal mucous membranes, relieving irritation and increasnig the activity of the parts. Properly used, as above directed, it controls intestinal irregularities, cures constipation and improves both gastric and intestinal digestion."

Euphorbia corollata is diaphoretic, expectorant, cathartic, emetic and epispastic. In very large doses it causes inflammation of mucous membranes and prostration.

Indications.—Bloody stools with tenesmus; colliquative diarrhea of typhoid fever and consumption; profuse watery diarrhea and profuse watery vomiting; debility of mucous tissues; constipation and irregularity of the bowels.

Dose.—Fluid extract, 1 to 30 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Euphorbia corollata,, gtt. x to xx; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Euphorbia Hypericifolia—Large Spotted Spurge.

Large spotted spurge is employed with great advantage in all wrongs of life in which a tonic astringent is clearly indicated. In cholera infantum its exhibition has often been followed by the most gratifying results, and in diarrhea, after the removal of all irritating causes, it has been found efficacious. In dysentery, after the subsidence of the inflammatory symptoms, its astringent action is deemed curative by many able practitioners.

In menorrhagia resulting from debility this species of

euphorbia constitutes a medicament of value, and in many forms of leucorrhea it exerts a corrective influence.

Euphorbia hypericifolia is astringent, tonic and, in very large doses, slightly narcotic.

Indications.—Intestinal irritation of infants; diarrhea when the discharges are greenish and irritating; vertigo with constipation; menorrhagia from debility.

Dose.—Fluid extract, 1 to 2 drops; specific medicine, 1 to 2 drops.

Usual Prescription.—℞ Euphorbia hypericifolia, gtt. x to xx; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Euphorbia Ipecacuanha—Wild Ipecac.

In small doses this agent is a useful remedy in all diseases involving the gastro-intestinal mucous surfaces. When employed in large doses great caution should be exercised, as it is said to have caused alarming hypercatharsis.

"Small doses relieve irritation of the gastro-intestinal mucous surfaces. It acts, in part at least, like ipecac, and in stomach and bowel disorders may sometimes be substituted for that drug. Its diaphoretic and expectorant qualities likewise resemble those of ipecac.

"This drug is indicated by persistent gastric irritation, irritative dysentery or diarrhea, and in dropsies with the mucous surfaces greatly irritated. It is reputed a sure cure for bilious colic."

Euphorbia ipecacuanha is diaphoretic, expectorant, emetic and cathartic.

Indications.—Diarrhea and dysentery when the evacuations are large and accompanied by tenesmic pain; cholera morbus and cholera infantum; persistent gastric irritation; dropsical conditions when the mucous surfaces are irritated; aphthous conditions associated with diarrhea and vomiting; diarrhea of phthisis; gastric and intestinal indigestion; bilious colic.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Euphorbia ipecac., gtt. v to x; water, ℥iv. M. Sig. Dose one teaspoonful every one or two hours.

Euphorbia Pilulifera—Snakeweed.

This agent constitutes a superior medicament in colds, coughs, asthma and all abnormal conditions of the respiratory organs. Its effects on patients suffering from asthma are marked and prompt, and afford much relief in a very short time. The dried leaves are sometimes smoked by these patients with most satisfactory and prolonged results.

Euphorbia pilulifera is tonic, antispasmodic, anodyne, and, in large doses, narcotic. In very large doses it sometimes causes giddy sensations.

Indications.—Paroxysmal, teasing cough, with nocturnal fits of asthma; tightness of the chest with difficult breathing; asthma; shortness of breath which is worse at night; labored breathing accompained with cough; chronic bronchitis and emphysema; severe spasmodic cough; distressing cough with copious expectoration; chronic bronchitis with asthma; distressing cough of phthisis.

Dose.—Fluid extract, 10 to 60 drops; infusion, wineglassful three times a day. The infusion is made by adding one ounce of the dried stalks and leaves to two quarts of water and boiling down gently to one quart. The following is a favorite prescription: ℞ Euphorbia pilul. fl. ext., ℥i; syr. simp., ℥ii. M. Sig. Teaspoonful four times a day.

Usual Dose.—Fluid extract, 10 to 60 drops every two to four hours.

Euphrasia Officinalis—Eyebright.

Eyebright constitutes a remedial agent of considerable usefulness in catarrhal diseases of the mucous membranes, both of the respiratory organs and the intestinal canal. In acute "cold in the head," when given in doses of ten drops every two or three hours, it will soon effect a cure. It is especially adapted to the colds of young children, and is promptly effective in the snuffles of infants.

Euphrasia is a remedy for all diseases of the mucous tract with increased discharges. It is one of the most reliable specific agents for acute coryza, being indicated in the copious discharge of watery mucus. It also controls cough, hoarseness, headache and earache supervening upon acute catarrhal affections. During

or following measles, it is one of the best agents to control the inflammatory catarrhal conditions, and to prevent catarrhal after-effects, as nasal catarrh, catarrhal ophthalmia, catarrhal otitis, etc. The more acute the condition, the better euphrasia acts. It is indicated in acute catarrhal conditions of the eyes, ears and nose, and where there is a secretion of acrid mucus from the eyes and nose with heat and pain in the frontal sinus.

"Although this is an old remedy, our use of it does not extend back so very far. Our attention was directed to it when in consultation with the most prominent Homeopathic oculist and aurist in this city. He said that he prescribed it daily, and with the greatest confidence. Since that time we have been prescribing it, and studying its action, in every case presenting in which it seemed to be the indicated remedy. Under old classifications it is described as a mild astringent and tonic. It is said to be indicated in all acute catarrhal diseases of the mucous membrane, especially when attended by profuse secretion of acrid mucus from the eyes and nose, with heat and pain in the frontal sinus, and profuse lachrymation.

"These symptoms are usually present to a marked degree only in *acute* troubles. Chronic mucous membrane lesions are seldom accompanied by much fever or pain. The secretion may be profuse, but it is not likely to be acrid. The euphrasia case complains of dull, aching headache—a feeling as though the head would burst; of distressing photophobia, and of a smarting, swollen, burning condition of the eyes. The accumulation of the discharge causes continuous winking in an endeavor to keep the cornea clean. When the nasal mucous membrane is involved, there is not only a profuse watery or semi-purulent discharge, but there is a continual coughing and sneezing, that harasses the patient day and night. When the respiratory tract is the seat of the disturbancé, the cough is caused by irritation of the larynx; there is profuse expectoration, breathing is difficult, and hawking and spitting, especially in the morning, constitute an unpleasant feature.

"With these indications and symptoms before us, euphrasia becomes an excellent remedy in the treatment of acute catarrhal troubles generally, whether they are of the eye, or ear, or respiratory, or intestinal character. In acute inflammatory conditions of the eye, whether catarrhal, scrofulous or rheumatic in their nature, euphrasia is a most efficient remedy. This is especially true in conjunctivitis and in iritis.

"It subdues the inflammation quickly, and readily relieves the pain. In the severe case of iritis in which we saw it given, the result was surprisingly satisfactory. Sulphate of atropia was used locally, and specific bryonia was alternated with the

euphrasia. Of course, all of the good results could not be attributed to the euphrasia alone, but the result, as a whole, was very pleasant. The consulting specialist declared that in bryonia Homeopaths and Eclectics had a remedy of incalculable value in subduing and in preventing intraocular inflammatory action and results, and that a very strange part of it is, that its value seems to be wholly unknown to practitioners of other schools." (Bloyer.)

Euphrasia officinalis is tonic and astringent.

Indications.—Acute rheumatic, catarrhal or scrofulous inflammation of the eyes; all diseases of mucous membranes attended with increased discharges; profuse secretion of mucus from the eyes and nose, especially when there is heat and pain in the frontal region.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 60 drops.

Usual Prescription.—℞ Euphrasia officinalis, gtt. x to ʒiii; water, ʒiv. M. Sig. Dose one teaspoonful every hour or two.

Ferrum—Ferri—Iron.

When iron is being administered substances containing tannic acid, gallic acid, vegetable astringents and gelatinized mucilage of acacia should be avoided, as they are incompatibles. The conditions calling for the use of iron also demand a nourishing diet. Only a small part of the iron taken into the stomach is absorbed, the greater portion passing away in the stools, as an insoluble sulphate. It is, therefore, necessary to continue the remedy for a long time. In the system metallic iron becomes oxidized, and its action is supposed to be owing to this chemical change. Iron should be administered during the time of digestion. Most of the preparations of iron are tonic, alterative and astringent. Iron is contraindicated in irritation of the alimentary canal, and also when there is a tendency to apoplexy and inflammatory affections.

"We employ iron as a restorative. It is a component part of the red blood corpuscles, and experience has shown that its administration stimulates the formation of these bodies. In proportion as the red blood corpuscles are increased, blood making becomes more active and nutrition is improved. It thus becomes a very important remedy in cases of anemia with impaired nutrition.

"As a restorative, it is better to administer the necessary quantity of iron with the food. Experiment has demonstrated

that at other times it is appropriated slowly or not at all. It does not require a very large amount to accomplish the object, for iron exists in small quantity in the body. The dose of metallic iron need never be more than five grains, often not more than one; whilst of the tincture, the dose will be from one to twenty drops.

"In the selection of the preparation I would be guided by the appearance of the mucous membrane. If it is deep red, use the tincture of chloride; if pallid, metallic iron.

"We also employ iron as a specific against certain zymotic poisons. The reader has probably employed the tincture of chloride of iron in erysipelas, and many regard it as a true specific in the disease, rarely making any other prescription. I think we may say, that in all cases of erysipelas presenting the deep red discoloration of the mucous membranes, with the same deep color of the local disease, the tincture may be prescribed with great confidence. But my experience with the disease has shown me that where the mucous membranes are pallid, the coating of the tongue white and pasty, the sulphite of sodium is the best remedy.

"Recent investigation has shown that the solid *blue* coloration of tongue is an indication for small doses of iron in any disease.

"The majority of our readers are well acquainted with the use of tincture of muriate of iron in erysipelas, and have administered it in this disease with a certainty that they rarely feel with regard to other remedies. I don't think any one, even the most skeptical in regard to specific medication, will question the specific action of this remedy in many cases of this disease. And as it is such a well known example, we will use it to illustrate certain facts in therapeutics.

"The first proposition I will make is, that it is not specific to all cases of erysipelas. Whilst in many, embracing some of the severest, it is the only remedy needed, in others you might quite as well give water, other than the iron proves a topical irritant.

"We ask the question, then, in what condition of this disease is it specific, and what are the symptoms indicating its use? Or, in what conditions is it contraindicated, and what are the evidences that show this?

"It is easier to pick out the case where other treatment would be preferable, and where we would not use the iron. In any case of erysipelas, with a full bounding, or full hard pulse, and bright redness of the local disease, I would always prefer veratrum as an internal and a topical remedy. Indeed, nothing is more certain than veratrum in these cases. Take again the case presenting the broad, pallid tongue, with moist, pasty coat, and I would very certainly prefer sulphite of sodium; or if it were a moist, dirty tongue, without so much pallor, sulphurous acid.

"But is it possible to point out the indications for iron? I

think it will be if we examine those cases carefully in which iron is *the* remedy. One of the most pronounced symptoms that I have noticed is a peculiar solid blue color of the mucous membranes, sometimes deepening into purple where there is a free circulation. The same change in color may oftentimes be noticed in the local disease. In several cases, other than erysipelas, I have been tempted to prescribe tincture of muriate of iron from this symptom, and with good results.

"Take a case of erysipelas of the severest type, in which iron is the remedy—what are the results of its administration *alone?* The pulse is 120 to 130, small and hard; within forty-eight hours it comes down to 80, and is soft and open. The temperature is probably 106°; in forty-eight hours it comes down to 100°. The skin is dry and harsh, the urine scanty and high colored, the bowels constipated; in forty-eight hours the skin is soft and moist, the urine free, the bowels act without medicine. The nervous system is in a state of extreme irritation, possibly the patient is delirious; in forty-eight hours the patient is conscious and the suffering relieved. Here we have the most marked effect of a *sedative, diaphoretic, diuretic, laxative and cerebro-spinant,* and yet we have given but the one remedy, tincture of muriate of iron. If tincture of muriate of iron thus becomes a specific to a certain form of grave zymotic disease, may we not hope to find other remedies of a similar character?" (Scudder.)

Ferri Chloridi, Tinctura—Tincture of the Chloride of Iron—Tincture of Muriate of Iron.

This preparation of the chloride of iron constitutes an energetic tonic, as well as a powerful astringent antiseptic. Its field of therapeutic activity is, therefore, an extensive and varied one. In chronic diarrhea it is often a useful remedial agent, and in dysentery indications for it are frequently presented. It has also been used in cholera infantum with gratifying results. In anemia resulting from acute hemorrhage it exerts a restorative influence, and in anemia associated with chronic disease, as well as in that of slow development, the tincture of the chloride of iron is equally beneficial. In chlorosis it is also a remedy of some value, and in conditions of the blood resulting from the absorption of septic matter it exerts a corrective influence.

When specifically indicated the tincture of the chloride of iron constitutes a medicament of curative power in erysipelas. In this disease it should also be used externally by applying it a little beyond the line of inflammation, and thus aid much in preventing an extension of the local manifestation of the disease. This

agent has also been employed successfully in diphtheria, especially when the tissues were of a deep red color.

"In the treatment of chronic inflammation of the kidneys where there is a large waste of albumin, the tincture of iron is a most efficacious remedy. In these cases there is a deficiency of action of all the vital organs, and anemia. The blood pressure in the kidneys is greatly altered and the general vital force is much reduced. As stated, the possible precipitation of a large quantity of albumin is the indication for its use, although it is beneficial in certain cases where the quantity is not large. In an experience of many years in the treatment of albuminuria, the writer has learned to prefer the ethereal tincture to the ordinary tincture of the chloride in these cases. Five to eight drops of the ethereal will accomplish the same results as twice that quantity of the ordinary tincture.

"The tincture of iron is of much service in the treatment of pyelitis, reducing the quantity of pus formed more rapidly than other agents. The diuretic effects of the tincture are of much service in these cases, especially if dropsy is present as a complication.

"It can be at once seen that the wide influence of this agent in these kidney diseases renders it valuable. It stimulates the digestive and appropriative organs, it forms new blood and thereby increases the quantity of oxygen in the system. It increases nerve force and through the nervous system the strength of the heart's action. It thus materially increases the blood pressure in the kidneys, and in every way improves functional activity. It reduces the quantity of uric acid and the phosphates in the urine when excessive, and relieves the consequent irritation. Its antiseptic properties further inhibit the formation of pus." (Ellingwood.)

The tincture of muriate of iron is alterative, tonic, diuretic, astringent and styptic. It is incompatible with vegetable astringents, alkalies and their carbonates, salts of the metallic elements, compounds of silver and mercury, the arsenates and arsenites, the borates, all vegetable compounds, tannic and gallic acid, and with albumin and gums.

Indications.—Deep-red color of a part and deep-red tongue; erysipelas, when the surface is dark red and the mucous surfaces of the same color; anemic conditions following profuse discharges, when there is no gastric irritation; anemia attending chronic diseases; passive hemorrhage from the kidneys, bladder and uterus; extensive suppuration attended with hectic fever and night sweats.

Dose.—5 to 30 drops.

Usual Dose.—5 to 10 drops in a tablespoonful of water.

Ferri Citras—Citrate of Iron.

This preparation is especially adapted to children and persons with irritable stomachs. It is useful in all cases calling for iron internally, when indicated as below. It is a pleasant ferruginous tonic.

Indications.—Cachectic conditions, as in scrofula and secondary syphilis; chlorosis, when there is fetor of the breath and a constant yellowish coating on the tongue, with pale, spongy gums.

Dose.—5 to 20 grains.

Usual Dose.—Liquor ferri citratis (a solution of ferric citrate), 5 to 10 drops.

Ferri Iodidi, Syrupus—Syrup of Iodide of Iron.

This syrup constitutes a palatable form of the iodide of iron. When administered in accordance with the indications given below, its action is prompt and curative.

The iodide of iron is alterative, tonic, antiseptic and slightly laxative.

Indications.—Debility, with a soft and relaxed condition of the muscular system; bloodless appearance of the surface; prostration of the system in secondary syphilis; scrofula and other cachectic conditions; glandular affections; atonic amenorrhea and leucorrhea; syphilitic ulcers; atonic and chlorotic states of the system; tabes mesenterica.

Dose.—2 to 30 drops.

Usual Dose.—2 to 20 drops, well diluted with water, after meals.

Ferri Oxidum Hydratum—Hydrated Oxide of Iron.

This is a tasteless and odorless pulp. By age it turns brick-red, assumes a crystalline form, and shrinks to one-third the original bulk. It may be quickly made from six ounces of the tincture of the muriate of iron. Dissolve bicarbonate of sodium in water and add it to the tincture until effervescence and precipitation cease. Then pour the mixture onto a piece of muslin and squeeze out as much of the liquid as possible, and again

mix the precipitate with water, and again squeeze it in the muslin strainer. The residue is then ready for administration. In an emergency Monsel's solution may be used, and a solution of caustic soda employed to precipitate the hydroxide. Or a solution of ferric sulphate may be mixed with twice its bulk of water and the mixture triturated with an excess of a paste made of calcined magnesia and water, and the resulting substance used.

This substance is the best antidote to arsenic known. The stomach should be promptly evacuated by means of emetics or the stomach pump.

Indications.—Acute arsenical poisoning.

Dose.—1 teaspoonful of the pulpy hydrate of iron every five or ten minutes until the urgent symptoms cease. For children one-half teaspoonful.

Another approved remedy for arsenical poisoning is made by shaking a mixture of magnesia in water with a solution of ter-sulphate of iron (ferric sulphate). It should be freshly prepared, and the magnesia mixture and the solution of iron should be kept in stock for that purpose.

Dose.—1 teaspoonful to 1 tablespoonful every fifteen to thirty minutes.

FERRI ET AMMONII CITRAS—IRON AND AMMONIUM CITRATE.

This preparation of iron is a good tonic. It is unirritating, and, being pleasant to the taste, is especially adapted to the treatment of children. It can be administered in either water or syrup.

Indications.—Dyspepsia accompanied by anemia and irritability of the stomach; anemic conditions of children; tabes mesenterica; chlorosis.

Dose.—5 to 10 grains.

Usual Dose.—5 grains in pill, powder or solution, from two to four times a day.

FERRI SUBSULPHATIS, LIQUORIS—SOLUTION OF FERRIC SUBSULPHATE—MONSEL'S SOLUTION.

This solution, when applied to superficial bleeding wounds, stops the hemorrhage promptly and without producing the least

pain. Coagulation of blood is instantaneously produced. It is useful in hemorrhages from the mouth, nose and throat, and also in profuse uterine hemorrhage.

Ferrum Phosphoricum—Phosphate or Iron.

The phosphate of iron constitutes a medicament which should not be neglected by Eclectic physicians, for its therapeutic field embraces many wrongs of life which are almost daily presented for consideration. The fact that it is one of the drugs known as the "twelve tissue remedies," and that it is extensively employed by Homeopathic practitioners, seem to cause many good Eclectics to overlook its great usefulness. This neglect of a good remedy is decidedly wrong, for Eclecticism is boundless in principles, and its adherents, therefore, should investigate everything likely to prove beneficial to the sick.

Ferrum phosphoricum is successfully employed in all abnormal states depending on a relaxed condition of muscular tissue, and also in wrongs of the blood.

In all ailments in which congestion constitutes a prominent characteristic the influence of the third trituration of this preparation of iron is unmistakably corrective, and in the first stage of all forms of inflammation its action is always in a positively curative direction. In all diseases presenting a muco-purulent discharge, with a tendency to hemorrhage, it exerts a restraining influence, and in all forms of hemorrhage caused by a relaxed or weakened condition of the blood-vessels ferrum phos. is one of our most reliable remedial agents. In the diarrhea of children whose faces appear pinched, when the skin is hot and there is great thirst, this medicament will render excellent service. It is especially valuable in the treatment of children who, in addition to debility and failing appetite, manifest a tendency to become dull and listless, and at the same time are constantly losing weight and strength. In such cases it exerts an influence which makes for increase in strength and better bodily development. In many inflammations, and some of the eruptive fevers, especially in young and sensitive children, its action seems to stand midway between aconite and veratrum. My invariable guide to the use of these three remedies in fevers is as follows: Small and frequent pulse, aconite; medium and frequent pulse,

ferrum phosphoricum; full, bounding and frequent pulse, veratrum. This rule I find to work very satisfactorily.

In the acute febrile or initiatory stage of all inflammatory affections of the respiratory tract, including rhinitis, laryngitis, trachitis, bronchitis, pneumonia, pleurisy and pleuro-pneumonia, small doses of ferrum phos. may be depended upon to aid much in a rational treatment. It also constitutes a valuable remedial agent in the first stage of gastric and enteric fevers, and in the inflammatory stomach-ache in children resulting from chill, and causing loose evacuations from the bowels, this agent often exerts the only needed corrective influence.

In articular rheumatism, especially of the shoulder, it is an effective remedy, and in pains extending to the upper part of the chest, attacking one joint after another, it has been highly recommended. It is also believed to be useful in muscular rheumatism, and in rheumatic affections of the aged, when the muscles are stiff and weakened, with a disposition to painful cramps, the phosphate of iron exerts a sustaining power which is very gratefully received by the patient, but if the cramps are severe it is well to combine it with viburnum prunifolium.

In all catarrhal and inflammatory fevers, and during the feverishness at the beginning of any disease, this agent is very useful. Many cases of chicken-pox, erysipelas and erysipelatous inflammations also come within the range of its curative action. In erysipelas it is employed both internally and externally with excellent results. It promptly reduces the heat, blood accumulation, pain and throbbing which accompany the beginning of abscesses, boils, carbuncles and felons, and when the fauces is very red and painful, but without exudation, the exhibition of ferrum phos. will afford marked relief. It also exerts a considerable relieving power when there are noises in the ears caused by blood pressure resulting from a relaxed condition of the veins not returning the blood properly.

In incontinence of urine resulting from weakness of the sphincter or excessive secretion of urine, its action is decidedly corrective, and in irritation of the neck of the bladder it is deemed a remedy of merit. In the early stage of gonorrhea and in orchitis ferrum phos. is employed with good results, and in epididymitis it often constitutes a useful remedial agent. When the menses are too frequent and profuse, and there is pressure

in the abdomen, bearing-down sensations and constant dull ovarian pains, accompanied by pain in the top of the head, this agent will exert a relieving influence. In vaginismus and vaginitis resulting from dryness and increased sensitiveness of the organ, ferrum phos. has been used with much advantage. As a preventive of fever after childbirth it is also deemed useful.

Indications.—Fever at the commencement of any disease, when the pulse is not full and bounding; capillary congestion with a burning sensation of the skin; inflammation of the eyes with sharp pain; feeble, compressible and quick pulse, indicating debility, especially in children; congested nasal mucous membrane; unnatural redness of mucous membranes of the mouth; inflammation of the fauces, characterized by redness and pain, without exudation; red and inflamed tonsils and swollen glands; excessive congestion of the uterus at the monthly periods; bearing-down sensation with constant, dull ovarian pains; pains in the back, loins and over the kidneys; debility of children when there are no organic lesions; convulsions with fever in teething children; febrile stage of inflammatory affections of the respiratory tract; hyperemia of the brain, producing delirium; dull, heavy pain on top of head; first stage of cold in the head; incontinence of urine from weakness of the sphincter, especially in children; diarrhea caused by chill.

Usual Prescription.—℞ Ferri phosphor., 3x, gr. xx to 5i; water, ℥iv. M. Sig. Dose one teaspoonful every half hour to every two hours.

Ferula Sumbul—Musk Root.

The fluid extract of musk root has frequently been employed in asthma, and in many cases with decidedly beneficial results. In hysteria its administration has been followed by marked improvement, and in epilepsy it is said to have proved useful. In Asiatic cholera it is believed by some physicians of large experience to be superior to all other drugs.

Sumbul is evidently worthy of further investigation than it has heretofore received. An eminent physician who has had a considerable experience in the use of this drug says that it is the most powerful vital stimulant known.

Ferula sumbul is stimulant, antispasmodic and nerve tonic.

Indications.—Spasms in nervous and muscular affections; hysteric conditions; epilepsy; asthma, and in all conditions in which there is exaggerated excitability of the spinal cord.

Dose.—Fluid extract, 5 to 30 drops.

Usual Dose.—10 to 15 drops.

Formaldehydi, Liquor—Solution of Formaldehyde.

Solutions of formaldehyde are efficient and valuable bactericides. Formaldehyde as a disinfectant may be sprinkled in a 2 to 5 per cent. solution over the room, or clothes saturated with the solution may be hung about the room. The various lamps and disinfectors in which formaldehyde is generated by heating paraformaldehyde constitute convenient methods of using this disinfectant. The disinfection of surface objects by formaldehyde has been very satisfactory, but it is said to be less efficient in disinfecting articles requiring deep penetrating power. In a 2 per cent. spray, or inhalation, it lessens the paroxysms of whooping-cough, and is deemed beneficial in phthisis. As a general antiseptic it is used in from ¼ per cent. to 2 per cent. solutions. It is said that a 20 per cent. solution applied on a pledget of cotton to the raw surface of an ulcerating sarcoma will not only control troublesome hemorrhage, but harden and improve the condition of the tissue. The application is painful but it can be made bearable by a previous application of cocaine. Sores and wounds when washed with a weak solution of formaldehyde are made clean and free from odor. A 1 to 5 per cent. solution applied into the folds of the vagina with a swab in gonorrhea aids in the curative process.

"Formaldehyde is exceedingly volatile and the vapor given off from its solutions is irritant to the nasal, faucial, and ocular mucous membranes. When concentrated it affects the cutaneous tissues similarly to phenol, leaving the surfaces roughish, white, and after a time insensitive. Its application to the skin does not produce pain. Of its internal effects but little is known. No ill effects followed the ingestion of a considerable amount of the 1 per cent. solution (Rideal), and of the paraformaldehyde; as large a dose as 90 grains has been administered as an intestinal antiseptic without harmful results. Owing to its action upon ammonia and ammonia bases, hydrogen sulphide, mercaptan, etc., forming odorless compounds, it has been used both in solution and vapor as an effective deodorant, the putrescent odor of de-

caying vegetables and flesh being instantly removed by it. A very small quantity of the 10 per cent. solution quickly deodorizes feces, brine, putrid meat, etc. Not only does it overcome odors, but it exhibits remarkable preservative powers. Thus the vapor from a pledget of cotton impregnated with six or eight drops of the 40 per cent. solution will preserve fish, meat, etc., for several days in a well covered vessel, even in hot weather. Neither odor nor taste is imparted to flesh thus preserved. Such organisms as give rise to lactic and butyric fermentation, as well as other organisms producing secondary fermentation, are destroyed by formaldehyde. This can be accomplished with solutions (1 to 20,000 to 1 to 10,000) which are too weak to interfere with the development and growth of the *saccharomyces cerevisiæ*, or with the production of alcohol.

"The generation of formaldehyde gas for purposes of disinfection and sterilization has recently assumed importance. Specially constructed lamps have been devised for the direct generation of the vapor either from methyl alcohol or from the polymerized formaldehyde or paraformaldehyde. Rooms, cellars, vaults, libraries, hospitals, schools, furniture, drapings, surgical dressings and appliances, etc., may be deodorized and disinfected by means of this gas. This substance has the advantage of being non-injurious to fabrics, metals, wood, and the common colors, except violet and light red. Professor F. C. Robinson states that at least a quart of methyl alcohol should be generated in disinfecting an ordinary living room. Several hours' exposure to the gas destroyed the pathogenic bacteria of typhoid fever and diphtheria, even when folded in between mattresses (Robinson). Koch's bacillus tuberculosis and other bacteria are said to be destroyed by it, the bacillus subtilis and bacillus mesenterica being possible exceptions. Roux, Trillat, Bosc, Wortmann, Stahl, Aronson and Berlioz are among the European experimenters who indorse formaldehyde as the leading disinfectant and antibacterial agent. In this country De Schweinitz and Kinyoun have made extensive investigations. Test-cultures of bacteria have been the means used to demonstrate the active and destructive properties of the gas upon pathogenic microorganisms. Kinyoun states it difficult to disinfect the interior of closed books, although it is claimed efficient by others, and he believes it doubtful to disinfect the interior of upholstered furniture, etc., unless very large amounts of the gas be employed. To accomplish results an exposure of at least one day is necessary, the larger the quantity generated the better the results.

"The various published reports would lead one to believe that the uses of formaldehyde for disinfecting purposes are practically without limit. This, however, proves not to be the case, for well conducted experiments have satisfactorily demonstrated

that it is of value chiefly as a surface disinfector and is of doubtful utility when deep penetration is required.

"Solution of formaldehyde, in strength varying from 1 to 5 per cent., appears to give excellent results in gonorrhea—particularly in gonorrheal vaginitis. It may also be used for other infectious diseases of the genitalia. Prof. De Smet reports sixty cases of gonorrhea in women in which formaldehyde gave complete satisfaction. The vulva was first washed with a warm 1 per cent. solution, after which, by means of a speculum, he poured a 2 to 5 per cent. solution into the vagina, and by means of a swab worked this into all the folds of the vagina and about the cervix uteri. Where the infection had reached the cervico-uterine cavity a 2 per cent. solution was injected into it. In cases where the cervix was ulcerated a formalin impregnated (1 per cent.) tampon of cotton or gauze was placed upon the sore and allowed to remain two or three hours. In severe cases of fungous blennorrhagic endometritis the parts were first curetted. The burning of the mucous membranes produced by the 5 per cent. solution is but transitory.

"Altogether formaldehyde appears to have a promising future, and careful experimentation will determine its field of usefulness. Meanwhile let us not expect too much of it, nor should we condemn it if it does not accomplish all that we are led to expect, until thorough tests have been given it at the hands of our physicians and surgeons." (Felter.)

Formaldehyde is antiseptic, disinfectant and deodorant.

Indications.—Locally, as an application and inhalation; all infectious and contagious diseases; all conditions requiring a disinfectant for surface disinfection.

Frasera Carolinensis—American Columbo.

This agent exerts a tonic influence upon the stomach, and improves the tone of the entire digestive tract. It is especially indicated when the digestive organs have been impaired by protracted disease, it here acting as a stimulant and astringent to the secreting surfaces, and thus preventing the excessive night sweats common to such condition. It also controls diarrhea and dysentery when the mucous membranes are in a relaxed and atonic condition.

Frasera is stimulant, tonic and astringent.

Indications.—Chronic constipation; atonic dyspepsia; chronic gastric catarrh; diarrhea and dysentery.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Dose.—5 to 20 drops, well diluted, every two to four hours.

Fraxinus Americana—White Ash.

This agent exercises a special influence upon the chyle-producing viscera, and otherwise improves secretion. It is employed with advantage in enlargement of the spleen, and in dropsical affections it is used with some benefit. It is highly recommended as a remedy well adapted to the treatment of uterine engorgements, and in bad cases of subinvolution and prolapsus of the uterus it has been prominently mentioned as being decidedly corrective. It is also highly esteemed by some physicians in many plethoric conditions of the uterus, and as a remedy for congestive dysmenorrhea it has been employed with satisfactory results. In conditions characterized by heavy, dragging sensations in the lower part of the abdomen, and a feeling as if the uterus would fall out of the pelvis, the employment of white ash is often beneficial, and when the uterus is large, soft and doughy, and a slight touch causes sharp pain, it exerts a relieving influence. It is also deemed a remedy of considerable value in irregularity of the menses, and in wrongs in which there is constant headache, with soreness in a circumscribed spot on the head, and which feels hot, it constitutes a useful medicament.

Fraxinus Americana in small doses is tonic, alterative and astringent. In large doses it is an active purgative.

Indications.—General debility and cachectic conditions; dropsical conditions; enlargement of the spleen; constipation; atonic dyspepsia; atonic conditions of the uterus.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Dose.—10 to 20 drops.

Fucus Vesiculosus—Bladder Wrack.

Bladder wrack is often used for the purpose of reducing unhealthy fat. It is said to act most effectively on cold, torpid individuals with cold, clammy skin, loose and flabby rolls of fat, and a relaxed pendulous abdomen. In such persons it reduces the size by toning up the vascular and lymphatic systems.

Fucus vesiculosus is alterative and diuretic.

Indicationss.—Scrofulous enlargement of glands; menstrual

derangements, with atonic and flabby condition of the uterine tissues; obesity.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Fucus vesiculosus, gtt. x to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every two to four hours.

Galium Aparine—Cleavers.

Galium is not adapted to passive conditions, but is a remedy of merit in fevers and acute diseases. In rheumatic and other fevers it markedly increases the flow of urine, and in dysuria its action is promptly curative. It relieves the suffering from scalding urine accompanying gonorrhea, and in calculous affections it is efficient.

"The first use of galium is to relieve irritation of the urinary apparatus, and increase the amount of urine. For this purpose it will be found one of our best remedies. In dysuria and painful micturition, it will frequently give prompt relief.

"It has recently been employed in *cancer,* used locally and internally. A case of *hard nodulated tumor* of the tongue, apparently cancerous, is reported in the *British Medical Journal,* as having been cured with it. Whether it was cancerous or not, it suggests a line of experiment which may develop an important use of the remedy." (Scudder.)

Galium aparine is sedative, diuretic and refrigerant.

Indications.—Suppression of urine; strangury in young children from colds, and in women from uterine irritation; irritability of the bladder from prostatic disease in old men; nodulated growths or deposits in the skin or mucous membrane.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Galium, gtt. x to xxx; water, ʒiv. M. Sig. Dose one teaspoonful every hour or two.

Gaultheria Procumbens—Wintergreen.

Wintergreen exerts a marked influence over the portal circulation. It has been used in the treatment of hemorrhoids from congestion of the pelvic circulation with very satisfactory results. It has also been found beneficial in inflammation of the bladder, irritation of the prostate gland, dysuria, sexual excite-

ment, and in spermatorrhea without impotency. In acute articular rheumatism, and in sciatica, it is a remedy of usefulness. The dry, harsh, persistent bronchial or phthisical cough, which is often very distressing, is markedly relieved by the use of gaultheria. In hepatic congestion it constitutes a medicament of corrective power, and in congestion of the glandular structures of the entire gastro-intestinal tract it is a remedy of value. It also exerts a curative influence in enlargement of the uterus, with a swollen and engorged condition of the cervix.

The oil of gaultheria has been quite extensively used in rheumatism. It is believed to possess all the valuable properties of salicylic acid. It has a more agreeable taste, and the unpleasant effects of overdosing are no greater. It is less depressing, and relapses under its use are less frequent. In chronic and irregular forms of rheumatism it is an efficient palliative.

"Wintergreen is an active remedy, and in our opinion does not receive the attention at the present time which it deserves. According to the ordinary methods of classification gaultheria is a stimulant, an astringent and aromatic. Experience teaches that its chief action is upon the genito-urinary organs, and especially upon the neck of the bladder. Its effect is direct and certain. It relieves an inflammation or allays an irritation of the neck and base of the bladder and urethra, in male or female, as quickly as any remedy we know. Because of this effect it is an excellent anaphrodisiac in all cases in which the increased sexual excitement is due to some disease or irritation of the reproductive organs, and not of a central nervous or mental origin.

"Wintergreen, because of this local action, is an excellent remedy in many cases of dysuria, in which the chief trouble is in or about the neck of the bladder or the prostate. Our experience with the drug does not prove it to be an active diuretic, provoking a greater flow of urine. But it relieves irritation of the sphincter vesicæ, and the flow is then unobstructed. Some writers claim for gaultheria a special action upon the kidneys, as in tubal nephritis, suggesting its use only in cases accompanied by irritation.

"Wintergreen should be studied as a remedy for spermatorrhea and prostatorrhea. It will not do well where there is laxness of tissues and depression. It allays irritation, and is the remedy in those cases in which there is little or no impairment of the venereal functions." (Bloyer.)

Gaultheria procumbens is stimulant, astringent, antiseptic

and aromatic. Large doses of the oil have caused death by producing inflammation of the stomach. The oil is frequently used to render unpleasant medicines more agreeable.

Indications.—Irritation or inflammation of the bladder, prostate and urethra; excitement of the sexual organs from abnormal conditions of the reproductive organs, and not from the mind; irregular forms of rheumatism.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops; oil, 2 to 6 drops.

Usual Dose.—5 to 10 drops.

Gelsemium Sempervirens—Yellow Jessamine.

Gelsemium constitutes a superior medicament in a wide and varied range of pathological states. In all fevers showing irritation of the nerve centers it is an indispensable remedy, and in diseases in which there is evident determination of blood to the brain and spinal cord it has no equal. It also exerts a curative influence in the various neuralgias which often arise from functional disturbances of the nervous system.

In the treatment of diseases peculiar to women gelsemium often constitutes a remedial agent of much usefulness. In amenorrhea it is a drug of positive action and its curative power is promptly manifested, and as a means of relieving patients suffering from dysmenorrhea it is employed with marked success. Hysterical convulsions, when not caused by organic wrongs, are speedily controlled by this medicament. It not only controls the spasms for the time being, but in many cases effects a cure through its tonic influence on the nervous system. In this disease the dose should be sufficiently large to bring the system completely under the influence of the drug. As soon as the convulsions have ceased the dose should be lessened, and then continued until a cure is effected. In some cases it will be necessary to keep the patient continually under the influence of the medicament for a considerable time. In order to quickly control the convulsions it is sometimes advisable to administer the drug hypodermically, when the dose should be from five to ten drops of the specific medicine.

As a parturifacient gelsemium is often employed with gratifying results, as it is of special value in cramps and other spas-

modic conditions. In the nervous irritability, vertigo, wakefulness, and other unpleasant symptoms which frequently accompany gestation, it affords a considerable relief, and its continuous use in small doses for five or six weeks before the time of delivery will mitigate many of the disagreeable symptoms which often appear in the latter period of pregnancy. In labor, when the lower segment of the uterus, vagina and perineal tissues are constricted, and the os uteri rigid, gelsemium will aid much in securing a normal condition of the parts involved. In this condition ten drops of the specific medicine (or a good fluid extract) should be added to five drachms of water and one teaspoonful of the dilution taken every ten minutes until the entire quantity has been administered.

In the treatment of gonorrhea gelsemium exerts a desirable influence. It subdues the urethral inflammation and prevents chordee. When a medium dose—five to ten drops—is taken at bedtime the patient's rest is seldom disturbed by this unpleasant condition. In spermatorrhea it induces a remission of the symptoms, and thus prepares the way for other remedies.

"Gelsemium exerts a specific influence upon the brain, and to a less extent upon the spinal center and sympathetic. It relieves irritation and determination of blood, and the disordered innervation that flows from it. Probably there is no remedy in the materia medica that is more direct and certain in its action. Given, a case of irritation and determination of blood to the brain, marked by flushed face, bright eyes, contracted pupils, restlessness and irritability, we prescribe gelsemium with certainty. This being a common complication in diseases of childhood, it is especially the child's remedy.

"Acting in this direction, it lessens the frequency of the heart's action, and removes obstruction to the free flow of blood —a sedative. It also increases secretion in the same way.

"I do not think the gelsemium exerts any important influence, other than through this action upon the nervous system. But, as will be observed, this is a very important action.

"It is contraindicated where the circulation is feeble, and there is tendency to congestion. Especially if there is a feeble circulation in the nerve centers. We never give it if the eyes are dull, pupils dilated, and the countenance expressionless. In such cases, it may prove fatal in quite moderate doses. A number of these cases are on record, three or four in which death was produced by as small a dose as gtt. xxx, of a common tincture.

"It has one other specific action, which is worthy of mention.

It is *the* remedy in dysuria from stricture, and will rarely fail in enabling the patient to pass urine in from four to eight hours." (Scudder.)

"The primary influence of gelsemium—that which probably always underlies its remedial influence upon any condition—should be borne steadily in mind in its administration. Its direct action is upon the central nervous system. It diminishes the blood supply of the brain and spinal cord by lessening nerve power, inhibiting the nerve control, slowing, retarding or staying the functional action of the nerve centers over the nerves themselves, influencing them steadily in the line of their physiological activities. It thus subdues all forms of nerve excitation of whatever character, or wherever located. It inhibits excessive nerve action. Nerve irritation, whether direct or reflex, comes uniformly under its influence.

"There must be, then, increased nerve tension, with its consequent irritation, and usually, local hyperemia or increased and undue blood supply in sthenic conditions. It is not the remedy when asthenia prevails." (Ellingwood.)

"The indications for gelsemium are bright eyes, contracted pupils, flushed face, elevated temperature and fast pulse. You can thus see that it is frequently called for in acute inflammatory affections of all kinds, and we do thus use it, and many times combine it with the indicated special sedative. It is of use in spasmodic affections. In reflex spasms of childhood we would not exchange it for any other remedy we possess. It is also of great use in spasms of centric origin. In retention of urine from a spasmodic contraction of the neck of the bladder we know of no better remedy; but for this purpose it must be given in full-sized doses. In suppression of menses from cold, combined with pulsatilla it has no equal. The dosage has a wide range—from the fraction of a drop to half a drachm. It is seldom necessary to give the latter dose, though we have done so, in the retention of urine, as stated above, and in a few cases of puerperal eclampsia and meningitis. Gelsemium is the remedy in the early stages of meningitis, belladonna in the latter." (Mundy.)

Gelsemium sempervirens is sedative, antispasmodic, alterative, relaxant, emmenagogue and nervine. In very large doses it has caused death.

Indications.—Flushed face, unnaturally bright eyes and contracted pupils, with increased heat of the head; pain in the entire head; restlessness and indisposition to sleep; urine passed with difficulty and in small quantities, with sense of irritation of the urinary organs; child rolling head from side to side; irrita-

tion and determination of blood to the brain; sudden movements of extremities or facial muscles; rigidity of the os uteri, it being thin, sharp and unyielding; neuralgia and nervous headache; sense of constriction in the loins, with tensive or drawing pain seemingly in the spine.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1-10 to 10 drops.

Usual Prescription.—℞ Gelsemium, gtt. x to xxx; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Gentiana Lutea—Gentian.

Gentian is an excellent stomachic bitter. It increases the appetite and aids digestion, accelerates the blood current, and acts generally as a stimulant and tonic. It constitutes a medicament of usefulness in debilitated conditions generally, and through its corrective influence the stomach and bowels are often brought up to a normal state. Slow and feeble digestion are often improved by this agent, and in fermentative dyspepsia it is employed with much advantage. Gentian is a good remedy in chronic ague, and in the atony of convalescence it is a favorite remedial agent. It is contraindicated by acute fever and by irritation.

Gentiana lutea is tonic and stomachic. In very large doses it irritates the stomach and bowels and causes vomiting. It is contraindicated where there is gastric irritability.

Indications.—Atony of the stomach and bowels, with feeble or slow digestion; diarrhea, with relaxation of mucous membranes; chronic malarial poisonnig; atonic dyspepsia, with mental and physical depression; general debility and exhaustion.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Prescription.—℞ Gentiana, ℥i to ℥ii; water, ℥iv. M. Sig. Dose one teaspoonful three times a day.

Geranium Maculatum—Cranesbill.

Geranium constitutes a very efficient medicament in all cases charcterized by profuse fluxes, whether of mucus, blood or serum. These often occur in chronic or sub-acute diseases. It is a most excellent remedial agent in many cases of diarrhea, especially when there is frequent watery stools and a constant desire to

evacuate the bowels. In dysentery, after the inflammatory condition has been removed, and a laxative employed, geranium often proves a useful remedy. It is also employed with much advantage in many cases of cholera infantum, and is especially valuable when there are very frequent, profuse and debilitating stools, and in gastric catarrh, when there is hypersecretion of fluid by the stomach, it is deemed a remedy of marked corrective power. In internal passive hemorrhages geranium exercises a restraining influence, and in phthisis pulmonalis it modifies the cough and night-sweats, lessens the expectoration and often overcomes hemoptysis.

Geranium is an efficient remedy locally as well as internally. As an application to bruises it should be largely diluted with water. A thick piece of absorbent cotton applied to a "black eye," and kept saturated with the dilution, will soon remove the unpleasant discoloration and swelling.

Geranium maculatum is astringent, tonic, styptic and antiseptic.

Indications.—Diarrhea, with constant desire to go to stool; chronic diarrhea, with mucous discharges; conditions attended with profuse mucous discharges; relaxation of the mucous surfaces of the pharyngeal cavity; hemorrhages; diarrhea in the later stages of phthisis pulmonalis; vomiting of cholera infantum; leucorrhea and gleet. Locally: Bruises of various kinds, and especially "black eyes."

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Geranium, gtt. xxx to ℥iv; water, ℥iv. M. Sig. Dose one teaspoonful every hour to every three hours.

Glycerinum—Glycerine.

In trichinosis, after the bowels have been thoroughly evacuated, glycerine in doses of a tablespoonful every hour, to the amount of five or six ounces a day, should be administered. At the same time high rectal injections should be given, first of water and then of equal parts of glycerine and water. In addition to this, large doses of brandy or other alcoholic preparation should be used. A drachm of glycerine used as an enema is usually more efficient in constipation than the ordinary large

injection of soap and water. In dysentery, one drachm of glycerine mixed with one drachm of castor oil constitutes an internal dose of frequent value. Glycerine diluted with water moistens dry, scaly surfaces and allays irritation due to lack of moisture, through its power of absorbing moisture from the air. Mixed with water it affords a means of relieving dryness of the mouth in fevers. In otorrhea the following gives good results: ℞ Glycerine, water, aa ʒi; borax, gr. iv; salicylic acid, gr. ii. M. Sig. Use in the ear twice a day, applying with a swab or syringe. When there is an arrest of secretion of cerumen and production of dry scales along the walls of the meatus, the following is useful: ℞ Glycerine, ʒi; Fowler's solution of arsenic, gtt. i. M. Sig. Apply night and morning with camel's hair brush, or cotton twisted upon the end of a match. In acute and chronic vaginitis a curative action is obtained from the following: ℞ Tannic acid, ʒi; glycerine, ʒiv. M. Sig. Apply at bedtime on tampons.

Glycerine is stimulant, antiseptic, demulcent and solvent. It is extensively used as a solvent of many alkaloids, extracts, salts, etc.

Indications.—Irritation of the mucous surfaces; constipation; dysentery; trichinosis. Locally: Scaly surfaces; inflamed surfaces.

Dose.—1 to 3 drachms.

Usual Dose.—30 to 60 drops.

Glycerylis Nitratis, Spiritus—Spirit of Nitroglycerine—Glonoin.

This remedy is an alcoholic solution containing 1 per cent. by weight of glyceryl trinitrate.

Glonoin—nitroglycerine—constitutes a medicament of great value in the treatment of many wrongs of the heart and blood-vessels. It is especially useful in heart diseases ocurring after middle life, and it is often of marked value in the irregularities of slightly enlarged and degenerated hearts with hardening of the arterial walls. It possesses a considerable relieving power in pseudo-anginas, which are frequently a troublesome feature of vascular disease. It is also an efficient remedy in many cases of sciatica, and it is said to relieve the neuralgic pains which occur in locomotor ataxia. In obstinate cases of hiccough it

has often proved a source of relief, and in severe cases of asthma a few full doses of the drug will often do much toward shortening the attacks. In low forms of fever a small quantity of the solution may be added to the other indicated remedies, and will sustain the vital powers of the patient much better than any of the alcoholic stimulants. In angina pectoris, bronchial, nervous and uremic asthma, and in chronic nephritis, glonoin is a remedy of superior merit.

Glonoin constitutes an emergency remedy which every physician should keep constantly ready for use. In many cases the speedy use of this agent in sudden heart failure will save life, when without it death would be inevitable. In sunstroke it is used with marked success.

"In a recent case of nephritis I obtained immediate and positive results from the use of glonoin. I was called to see a patient who I was told was having great trouble with his breathing, but as the call came at a time and place when I could not go especially prepared for that which, on examination, I found to be a very serious condition, my special pocket-case came to the rescue—so it proved. The poor fellow, aged fifty, tried the best he knew to get his breath, and at the same time to stem the efforts at vomiting. The pulse was irregular and rapid and with varying force; the heart was in a tumult; hearing and sight were impaired; the tongue was coated heavily and its tissues were pale; the breath was foul, but of no uriniferous odor; the abdomen full and the feet swollen. No examination of his urine had ever been made by the medical men who had attended him, but I surmised that an analysis of this man's urine would disclose without a doubt the immediate cause of this most distressed difficulty in breathing.

"I selected glonoin, 1-250 of a grain every twenty minutes, at first as the remedy to afford relief. In the meanwhile I used the hot blanket pack over the kidneys, and as soon as the stomach would retain it I gave a dose of epsom salts in hot water.

"As soon as I could I made a urinalysis. The urine looked heavy and cloudy; dark yellow; neutral; specific gravity 1020. Heat almost solidified the urine in the test-tube, as there was a large quantity of albumin. The microscope showed uric acid crystals, epithelial, hyaline and fatty casts. The next morning the patient was decidedly easier. I gave one-sixth of a grain of podophyllin and ten grains of the sulphite of sodium every two hours, with an occasional dose of epsom salts, until the tongue was clean. The glonoin was continued every three or four hours. The little pellets always first dissolved in water, for I calculated that so long as the tongue showed an atonic and

foul condition of the stomach and intestines, that absorption would be slow—too slow; and since he would not allow the pellet to dissolve on his tongue, I preferred to first dissolve it.

"As soon as the patient's tongue cleared *and his appetite returned*, everything else except caution and glonoin was discontinued, and my patient looks as though he might enjoy some of this world yet, at least for a while; and I believe he will, conditionally that drink and diet are prudently looked after.

"This is not my first experience with glonoin in albuminuria and nephritis by any means; but the results from its use in this case, to my mind, are to be considered 'great work.' I cannot find another remedy that will relieve spasm and arterial tension and flush the capillaries as quickly as nitroglycerine, but with this should go the caution to be careful how frequently the dose is administered and how long its use is continued." (Neiderkorn.)

Glonoin is a powerful stimulant.

Indications.—Throbbing of carotid and temporal arteries; feeling of fullness and pressure in the head, made worse by jarring, stooping or heat, as from the sun; sunstroke; neuralgia of the heart, when there is extreme atony; nephritis.

Dose.—1 per cent. solution, ¼ to 1 drop. It may be used in tablet form.

Usual Prescription.—℞ Nitroglycerine (1 per cent. solution), gtt. x to xxx; water ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Glyconda—Improved Neutralizing Cordial.

Glyconda is employed with marked success in flatulent dyspepsia, and in all distressing sensations in the stomach it promptly acts in a curative direction. In acid derangements of the stomach and bowels of an atonic character it is a very efficient remedy, and in acid conditions of the digestive organs of children its corrective influence is speedily manifested. In fermentative diarrhea of children it is seldom that any other remedy is needed, and in cholera infantum glyconda may well constitute a leading part of the treatment.

"Glyconda is not an unpleasant remedy to take. We all know by experience the unpleasantness of sweets to many sick persons. With glyconda this trouble is almost entirely overcome, and we can give it, in doses small or large, to infants and adults, as a panacea for vomiting, as well as for acidity and foulness of the stomach. Glyconda is one of the best carminatives the phy-

sician has at his command. Take, for instance, flatulent dyspepsia. In many of these cases an hour or two after eating the patient becomes the victim of the most distressing stomach sensations. Many times it is not an acute pain, but a sense of weight and oppression almost unbearable. In such a case give to an adult from one to two teaspoonfuls of glyconda, the relief is almost immediate. The alkali counteracts the acidity and burning, and the kindly, soothing and stimulating influence of the mentha piperita puts a quietus on the local oppression, pleasing to the doctor and grateful to the patient. The dose can be repeated as often as needed, without fear. In a very severe case of measles, with a high temperature and sick stomach, a few drops were given with every dose of the special sedative, the results being all that could be desired." (Fearn.)

Glyconda is a non-fermentable alkaline cordial.

Indications.—Gastro-intestinal diseases attended with irritation, flatulence, vomiting, diarrhea or acidity.

Dose.—1 to 2 drachms every half-hour to every two hours; children, 10 to 20 drops.

Usual Prescription.—℞ Glyconda, ʒi to ʒiv; water, ℥iv. M. Sig. Dose one teaspoonful every half-hour to every two hours.

Gossypium Herbaceum—Cotton Plant.

Gossypium has been extensively employed in diseases of the genito-urinary organs of women, and often with the most gratifying results. It is believed by many experienced physicians to be the most powerful emmenagogue in the materia medica. It is not a remedy for irritation, but is especially adapted to atonic conditions. It is a direct stimulant to the ovaries and uterus, causing an increased flow of blood and better nutrition. In cases of delayed menstruation, where the woman feels no evidence of the expected flow, but instead, dullness and oppression, it constitutes the needed remedy. It also exerts a stimulating influence upon the entire urinary apparatus, and increases the quantity of urine. It is especially indicated in atonic conditions of the pelvic viscera. Gossypium is contraindicated in pregnancy.

Cotton, when cleaned of oil and foreign substances, is extensively used, and known as absorbent cotton. Gun-cotton is also made from it. Antiseptic cotton is prepared by dipping cotton into a solution of either salicylic or benzoic acid, castor oil, resin and alcohol, and then drying it.

A refined oil of cotton seed is frequently used as a substitute for or an adulterant of olive oil.

Gossypium herbaceum is diuretic, emmenagogue and parturient.

Indications.—Delayed menstruation, when there is back-ache, with sense of dragging in the pelvis; lingering labor, resulting from atonic condition of the uterus; sense of weight and fullness in the bladder, with difficult micturition; gastric disturbances occurring during menstruation or early pregnancy.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 20 drops.

Usual Dose.—5 to 10 drops.

Grindelia Robusta—Hardy Grindelia.

Grindelia robusta is a stimulant to the nutritive processes, both in its general and local action. It is used with some success in asthmatic breathing, especially when there is pectoral soreness and a sense of rawness. It lessens the accompanying dry and harsh cough. The labored breathing in which it is indicated in plethoric persons often causes the face to assume a dusky appearance. It has also been employed with satisfaction in atonic ulcers. Largely diluted with water, it is deemed a valuable local application in rhus poisoning and in atonic ulcers.

Grindelia robusta is stimulant, expectorant and antispasmodic.

Indications.—Difficult breathing of a spasmodic character; chronic catarrhal conditions of respiratory, renal and cystic surfaces; poisoning from rhus toxicodendron.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 10 drops.

Usual Dose.—2 to 5 drops.

Grindelia Squarrosa—Scaly Grindelia.

Grindelia squarrosa has been employed in malarial affections with satisfactory results, and is deemed especially valuable in chronic agues. In splenic congestion and hypertrophy it has been found useful, and it is a remedy of some value in asthma. In chronic bronchitis and in pertussis it has been favorably recommended. It is also said to be useful as an application in rhus poisoning and painful eczematous and vesicular eruptions.

Grindelia squarrosa is expectorant, antispasmodic and sedative to the nervous system.

Indications.—Pains in the hepatic and splenic regions; puffiness of tissues; pallidity of the skin and mucous membranes; soreness of the eyeballs and of the muscles; sallow skin; debility and indigestion.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 30 drops.

Usual Dose.—1 to 10 drops.

Guaiacolis Carbonas—Guaiacol Carbonate.

Guaiacol carbonate has been used in many cases of phthisis with decided benefit. Under its influence the appetite and bodily strength increase, the cough becomes less violent, the night-sweats cease, and the general health gradually improves. It should be continued for at least one year from the date of the disappearance of all the symptoms. In typoid fever it allays gastric irritability, arrests abnormal fermentation, eliminates poisonous materials, prevents complications and shortens the duration of the disease.

"It is only in comparatively rare cases that guaiacol given by the mouth, has any influence on the temperature of acute pulmonary tuberculosis, when of high intensity; whereas, the author states, a daily inoculation of from two to five minims, in a very large proportion of cases, reduces it gradually and permanently. In many of the cases the injections were persevered in for some time before any impression was produced on the temperature. The temperature fall is comparatively gradual, and very rarely falls to subnormal. With this gradual fall in the temperature, improvement almost invariably occurs in the other symptoms, the cough and expectoration diminishing, and the appetite and weight increasing. A moderate, warm perspiration, which usually follows the injection at a variable interval, very soon takes the place of the regular hectic night-sweats. The author's custom is usually to continue the exhibition of the remedy by the mouth at the same time, not only to aid in the saturation and probable sterilization of the blood, but because pure guaiacol seems to check the decomposition of food in the *prima via,* which the enfeebled digestion of phthisical patients readily permits. As to the dose and mode of hypodermic injection, Dr. C. usually begins with the minimum dose, giving it before the diurnal rise of temperature has passed above normal. If temperature is not reduced in a few days, the dose is increased drop by drop to 5

min. or even 7 min., which rarely requires to be exceeded. If the reactive sweating is excessive, it may be necessary to give two small injections daily, but this is quite exceptional; at the same time he has used guaiacol epidermically, instead of a second injection, to anticipate the evening rise of temperature, painting from 10 to 30 min. over the cutaneous area corresponding to the pulmonary lesion. Some patients are extremely sensitive to this mode of using the remedy, being more affected by it than by the other methods. Each case must be closely observed and treated on its individual indications. In a number of cases where there was much cough, and where the strumous cachexia was pronounced, he has used hypodermically a 5 to 10 per cent. solution of iodoform in the guaiacol, and has also used the same formula in capsules, but was unable to observe any more favorable results than with the plain guaiacol. The buttocks is the most favorable region for the injections, as no vein of sufficient caliber will be encountered.

"In every case in which guaiacol is used hypodermically, it is, sooner or later, distinctly tasted by the patient a few minutes after inoculation, and this lasts a considerable time." (Coghill.)

Guaiacol carbonate is antiseptic. It checks the development of micro-organisms.

Indications.—Violent cough, accompanied by continued fever, poor appetite, night-sweats and sleeplessness; expectoration of a bad odor; dullness at the apices of the lungs; sibilant râles and rhonchi; septic condition of the intestinal tract.

Dose.—5 to 10 grains, three times a day. The dose should be gradually increased until the quantity administered daily amounts to from 50 to 90 grains. In typhoid fever from 15 to 30 grains should be given night and morning; oily fluid, 2 to 10 drops.

Guaiacum Officinale—Guaiacum.

Guaiacum has been extensively employed in inveterate forms of syphilis with marked advantage, and in rheumatism, when specifically indicated, its influence has been unmistakable and most gratfying to patient and physician. In some cases of gout it has also proved useful, and in dropsical conditions it has been used with some success. It is not well borne when there is a tendency to congestion.

The action of resin guaiac is the same as that of guaiacum, and may be employed for the same purposes, in doses of five to twenty grains.

"This agent has its own peculiar and limited sphere of action. That guaiacum would cure some cases of rheumatism and not others has been known for many years, but it has remained for specific medication to point out just the kind of cases guaiacum will cure, and thus prevent disappointment arising from hopefully administering this remedy in cases where it will do no good. The indications for guaiacum are: Dry skin, swollen and tender joints, swelling and tenderness of the tonsils, a feeling of dryness and stiffness in the throat, with pain on swallowing. Guaiacum, in ten-drop doses of the specific medicine, every three or four hours, will relieve the patient and gratify the physician, and will be given with a confidence to which the routine doctor is stranger. Evidence as to the efficiency of guaiacum in the treatment of chronic articular rheumatism is plentiful in the older medical works, but on account of the many failures of this remedy to fulfill expectations, it has passed out of active use. These cases are easily accounted for, and also an occasional success, since it only proves curative when given according to directions." (Watkins.)

Guaiacum officinale is diuretic, diaphoretic and stimulant.

Indications.—Amenorrhea and dysmenorrhea when due to atony of the pelvic viscera; inactivity of the skin; chronic rheumatism, especially when the skin is dry and the joints tender and swollen; swelling and tenderness of the tonsils; sensation of dryness and stiffness in the throat, with pain on swallowing; obstinate skin eruptions.

Dose.—Tincture, 5 to 60 drops.

Usual Dose.—10 to 15 drops.

Guarana—Uabano.

This remedy is deemed an efficient agent in headaches, and it has been principally employed in their treatment. Sometimes its continued use causes palpitation. In such cases it should be at once discontinued. It is contraindicated in neuralgia, neuralgic headache, chronic headache, and in all cases where it is not desirable to excite the heart.

Guarana is diuretic, excitant of the cerebro-spinal centers, astringent and nervine tonic. Its administration in large doses is frequently followed by dysuria.

Indications.—Severe headache, with anemia; headache resulting from dissipation; mental exhaustion and mental depression; pain in the head which is increased by movement or noise;

pain in the head accompanied or followed by nausea or vomiting; headache with pallid face and feeble pulse; sick-headache.

Dose.—Fluid extract, 1 to 15 drops; specific medicine, 1 to 15 drops.

Usual Prescription.—℞ Guarana, gtt. xx; water, ℥ iv. M. Sig. Dose one teaspoonful every hour or two.

Guarea Rusbyi—Cocillana.

Indications for this remedy are frequently seen in bronchopneumonia and chronic bronchitis. It decreases the frequency of the cough, and causes the bronchial secretion to become less viscid and more easily expectorated, and at the same time diminishes the amount of the secretion. In senile bronchitis, however, this medicament is said to be contraindicated.

Guarea rusbyi is expectorant, tonic and laxative.

Indications.—Bronchial catarrh, especially when of the subacute and chronic forms and accompanied by scanty or moderately profuse secretion; cough of bronchitis, especially when without expectoration; harsh and exaggerated respiration; teasing cough without expectoration; soreness under sternum caused by coughing; cough with dyspnea; dry hacking cough accompanied by pain in the chest; soreness in the chest with incessant cough and without expectoration; acute bronchitis when it is difficult to establish expectoration; asthma with cough and tenacious expectoration; chronic coughs; tight and paroxysmal coughs; night sweats; coryza.

Dose.—Fluid extract, 5 to 30 drops.

Usual Dose.—5 to 15 drops every two to four hours.

Hematoxylon Campechianum—Logwood.

Logwood has often been employed in chronic diarrhea with a success seldom obtained from any other remedy. It is most efficient when administered in the form of a strong decoction of the extract. It constitutes a remedy of restraining power in infantile diarrhea, as well as in tuberculous diarrhea, and in dysentery much benefit has been derived from its administration. In gangrene and in foul-smelling sores it has often proved useful as an antiseptic and healing application. The internal use of logwood colors the stools and urine a blood-red or purplish

blue—a fact which should always be mentioned to mothers and nurses.

Hematoxylon campechianum is tonic and astringent. It should never be combined with chalk or lime-water, as they are incompatibles.

Indications.—Diarrhea and dysentery of long duration; hemorrhages from the lungs, bowels and uterus; summer complaint of children; night-sweats.

Dose.—Extract, 10 to 30 grains; fluid extract, 5 to 60 drops.

Usual Dose.—5 to 15 drops.

Hamamelis Virginica—Witch Hazel.

Hamamelis exerts a special influence upon the veins, facilitating the flow of blood toward the heart. It causes contraction of the veins, and is employed in diseases characterized by venous dilatation. In hemorrhoids, when there is fullness of the part with heaviness and downward pressure, hamamelis may be administered with assurance of beneficial results. As its action is upon the entire venous circulation it may be employed in disease of any part showing the specific symptoms given for the drug. The tonic action of hamamelis upon the veins makes it an excellent internal remedy in hemoptysis, hematuria, epistaxis, and in passive hemorrhages from the uterus, or the surface of the mucous membrane of any part or place. In purpura hemorrhagica it is often used with satisfaction, and in some cases of anemia it is deemed a remedy of merit. Hamamelis is a frequently indicated medicament in diarrhea, and in some cases of dysentery its curative influence is promptly manifested. It is also of value in many cases of acute catarrh or ozena, and in pharyngitis, laryngitis and bronchitis, as well as in tonsillitis, especially when the tissues are relaxed and the discharges are copious, it constitutes a remedy which may well be made a leading part of the treatment.

Hamamelis is extensively used as a local application in numerous abnormal conditions, such, for instance, as leucorrhea, chafings, irritations, contusions, burns, scalds, frost-bites, itchings, smartings, swellings, eczema, herpes, erythema, carbuncle, fissured anus, ulcers and chancroid.

"The hamamelis has a specific action upon the venous system, giving strength to it, and facilitating the passage of venous blood. It may, therefore, be employed with advantage in any case where a part is enfeebled and there is a sluggish circulation. Thus we use

it in cases of catarrh and ozena; chronic pharyngitis, disease of the tonsils, pillars of the fauces, vellum and uvula, and in chronic laryngitis. The indications for its employment are, thickening of mucous membranes, with enfeebled circulation and increased secretion, either mucous or muco-purulent.

"It is also a very useful remedy in the treatment of diseases of the uterus and vagina. Given a case with the conditions named—thickening, with relaxation, enfeebled circulation and increased mucous or muco-purulent secretion, and its action is very positive.

"We employ it also in the treatment of various lesions of the lower extremities, both as a local application and an internal remedy, and many times with excellent results.

"It is an excellent dressing for erysipelas and for burns, giving that slight stimulation that seems to be required in these cases." (Scudder.)

"Witch hazel influences the veins as certainly as strychnine does the nervous system. Through this effect it affects favorably varicose conditions generally. Varicocele is bettered by it, and venous congestions, like phlebitis and phlegmasia dolens, are overcome by hamamelis. Congested ovaries or testicles, with a dull, heavy, aching pain, are benefited by hamamelis. Hemorrhages are cured by hamamelis. When there is fullness, congestion and weight, hamamelis is an excellent remedy. There is that other class of cases in which there is constriction, irritation, tightness, a feeling as though a cockle-burr were within the grasp of the sphincter. In these the remedy is collinsonia, not hamamelis. Note the distinction as well as the difference. Hamamelis is a kidney remedy when there is fullness and relaxation of the organ. There may be polyuria or hematuria. It is a remedy for chronic vesical irritation when there is much fullness and tenesmus." (Bloyer.)

Hamamelis virginica is tonic, sedative and astringent.

Indications.—Fullness of mucous membranes; pallid mucous membranes; relaxation of perineal tissue; hemorrhoids, when the venous circulation is enfeebled; passive hemorrhage; fullness of veins, inclined to dilatation; pain in the testicles and ovaries, when produced by congestion; excessive secretion of mucus; engorgement and hemorrhage of the venous system, especially of the mucous membranes and skin; ulceration of the stomach and intestines; gastro-intestinal irritability of the later stages of phthisis; abraded and inflamed mucous surfaces. Locally: Various forms of eczema and other cutaneous diseases; bruises and wounds; piles; aphthous sore mouth.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—Specific medicine (or any good distillate), 5 to 20 drops.

Hedeoma Pulegioides—Pennyroyal.

This agent is a valuable stimulant diaphoretic, which is very kindly received by the stomach, and is quite certain in its action. It is used as a remedy for colds with good results. In amenorrhea from cold it is the safest and most certain remedy we have. It is more speedily effective when administered in hot water.

The oil of hedeoma is employed as a carminative and antiperiodic. Equal parts of the oil and alcohol, applied with gentle friction, often give much relief in rheumatism and other painful affections. The dose of the oil is from 2 to 10 drops.

Hedeoma pulegioides is diaphoretic, emmenagogue and stimulant.

Indications.—Suppression of lochia; suppression of menses from cold; rheumatic affections; flatulent colic; suppression of cutaneous secretions.

Dose.—Fluid extract, 15 drops to 2 drachms.

Usual Dose.—30 to 60 drops.

Helleborus Niger—Black Hellebore.

This remedy constitutes an efficient stimulant to the menstrual flow, and is especially indicated when the patient complains of flashes of heat, burning of the surface and sensitiveness of the perineal and pelvic structures. It has also been employed with some success in hypochondria and hysteria.

Some writers claim that this agent increases virility in the male, and cures sterility when dependent upon torpor.

Helleborus niger is diuretic, stimulant to the spinal and sympathetic nervous systems, anthelmintic and emmenagogue. In large doses it is a drastic cathartic. Very large doses have caused death.

Indications.—Flashes of heat; burning of the surface and sensitiveness of the perineal and pelvic structures, with delayed menstrual flow; jelly-like mucous discharges from the bowels; hypochondria and melancholia; screaming and starting in sleep; uncomplicated anasarca following scarlet fever; dullness of intellect, indifference and stupor.

Dose.—Fluid extract, 1 to 3 drops; specific medicine, 1-10 to 3 drops.

Usual Prescription.—℞ Helleborus, gtt. v to x; water ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Helonias Dioica—False Unicorn.

Helonias is employed with marked advantage in wrongs of the stomach, and is especially valuable in dyspepsia of the atonic form. In nausea of pregnancy it is often a very efficient remedy, and in nephritis, both acute and chronic, it is a useful remedial agent. The most marked effect, or special action, however, of helonias is on the uterus, and it is a remedy of curative power in all abnormal conditions caused by loss of tone in that organ. In sterility from uterine atony it is without doubt the most efficient remedy known. It many times prevents miscarriage through its tonic action on the uterus and the general system. The general health is improved by its use, as a result of its influence on the digestive organs, increasing digestion and promoting assimilation.

"It exerts the general influence of a tonic, and a special tonic action upon the urinary and uterine organs. It will be found superior to other remedies for these purposes. One of the special indications for its use is in the mental depression and irritability that attends many of these affections. I am of the impression that, in many cases, the relief of this cerebral disturbance is its most important action." (Scudder.)

Helonias dioica is tonic, alterative, diuretic, vermifuge and emmenagogue. In large doses it is emetic.

Indications.—Pain or aching in the back, with leucorrhea; atonic conditions of the reproductive organs of women; mental depression and irritability, associated with chronic diseases of the reproductive organs of women; constant sensation of heat in the region of the kidneys; menorrhagia, due to a weakened condition of the reproductive system; amenorrhea, arising from or accompanying an abnormal condition of the digestive organs and an anemic habit; dragging sensations in the extreme lower part of the abdomen, whether due to uterine trouble in the female or cystic wrong in the male.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, ¼ to 20 drops.

Usual Prescription.—℞ Helonias, gtt. x to ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every two hours.

Hepatica Americana—Liverwort.

Liverwort exerts a stimulant and tonic influence upon the stomach and small intestines, relieving irritation and promoting functional activity. It may, therefore, be employed in atonic conditions of these and associate viscera with advantage.

"Hepatica exerts an influence upon all mucous surfaces. Probably its best action is upon the bronchial mucous membrane, when enfeebled from inflammation or irritation, attended with profuse secretion. In these cases it may sometimes be given with great benefit." (Scudder.)

Hepatica Americana is tonic, diuretic, astringent, demulcent and deobstruent.

Indications.—Irritation of mucous membranes, especially of the air passages; cough, when there is tickling, itching or scraping sensation in the fauces; bronchitis, with purulent or bloody expectoration; excessive secretion of mucus.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—10 to 20 drops.

Hydrangea Arborescens—Seven Barks.

Hydrangea constitutes a medicament of great value in diseases of the genito-urinary organs. It gives tone to the kidneys, improving their functional activity, and thus tending to the arrest of the formation of urinary deposits and calculi. It relieves irritation of the bladder and urethra, and hence proves useful in case of gravel. It also exerts an influence upon the respiratory mucous membrane, relieving bronchial irritation.

"Hydrangea is another of those remedies that act so efficiently upon the urinary apparatus, and in which the Eclectic materia medica is so profusely rich. It has had cathartic, diuretic, diaphoretic and antilithic properties ascribed to it. Rather than to depend upon any one of these properties when prescribing hydrangea, we prefer to have the prescription of it upon the knowledge that 'hydrangea relieves irritation and improves the nutrition of the urinary mucous membrane.' Besides, it is said to have, to a less degree, an influence upon the mucous membrane of the respiratory and digestive organs.

"At one time it was said that hydrangea would dissolve stone in the bladder. We presume that no physician will claim that quality for it now. However, its action upon the kidneys and bladder is such that it dissipates the causes that lead to the formation of stone in the bladder. To a certain extent it increases the amount of water excreted by the kidneys, and this overcomes the serious effects of alkaline or phosphatic urine. By this same action it lessens the pain of a calculus passing through the ureter. The burning distress and discharge of chronic gleet are lessened by hydrangea. The irritation of the mucous membrane in and about the genito-urinary tract is lessened by the administration of hydrangea. Through its free action upon the kidneys, hydrangea is an excellent 'blood medicine.' It assists in washing out cutaneous, strumous, and perhaps tubercular disorders."

Hydrangea arborescens is tonic, diuretic, sialagogue, and cathartic. Very large doses cause dizziness of the head and oppression of the chest.

Indications.—Irritation and malnutrition of the urinary mucous membranes; functional derangements of the kidneys, tending to the formation of calculi and urinary deposits; deposits in the bladder which are small enough to pass through the urethra; spasmodic stricture of the urethra; painful micturition arising from catarrhal inflammation of the urinary tract.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—10 to 20 drops.

Hydrastis Canadensis—Golden Seal.

Hydrastis is an energetic tonic to the circulatory and mucous structures. It is especially valuable in diseases associated with irritation or debility of the gastric mucous surfaces. In acute indigestion due to sudden change of diet it constitutes a useful medicament, and in chronic inflammation of the glands, as well as of the mucous structures, it is employed with gratifying results. In hepatic torpor with constipation and chronic gastritis, small doses of hydrastis exert a curative influence, and in hemorrhage from the uterus due to debility it is often useful. In fact, in all diseases characterized by sub-acute or chronic catarrhal conditions of the mucous membranes, whether of the stomach, intestines, bladder, vagina, urethra, uterus, bronchi or conjunc-

tiva, the well-directed use of hydrastis, both internally and locally, will always give good results. In convalescing it improves the appetite and nutrition, and acts as a good tonic when given in doses of from five to twenty drops, in water or milk, three times a day. When there is acute inflammation, with arrest of secretion, it is contraindicated.

Hydrastis constitutes a valuable local application, and may be employed with marked benefit in anal fissures, rectal ulcers, vaginal and uterine ulcerations, leucorrhea, indolent ulcers, and many other abnormal conditions of a similar character.

"Hydrastis is a valuable drug in disordered states of the digestive apparatus, especially when functional in character. It is not adapted to all classes of cases, but is rather to be considered as indicated in disorders of a sub-acute character and in atonic states with increased flow of mucus. In sub-acute and chronic inflammation, with free secretion, it will be found to render good service. As a general bitter tonic it resembles, though it does not equal, calumba and gentian, but is more applicable to debilitated conditions of mucous tissues. Beginning at the mouth, its beneficial action may be traced throughout the alimentary canal. For aphthous stomatitis it is equalled only by coptis and phytolacca. It is not the remedy in this disorder when the mucous secretions are checked, but is best adapted to sub-acute forms bordering on a chronic state. As a remedy for various gastric disorders, it will take a leading place, especially if it be borne in mind that it is never beneficial, but, on the contrary, does harm, in acute inflammatory conditions. When, however, the trouble is sub-acute and semi-chronic, and especially with mucorrhea, or even secretion of pus, the drug will give good results. It is indicated in gastric irritability, relieving the irritation, and afterward restoring the tone of the parts. For years the powdered root was made into aqueous infusion, which, when cold, was employed with marked benefit, but now we have pleasanter preparations which give equally as good results, without entailing the unpleasantness of swallowing a large quantity of bitter and crude medicines." (Felter.)

"Colorless hydrastis surpasses, in both efficiency and pleasantness, all other remedies in the treatment of gonorrhea. It does not stain the clothing, and is not painful. For more than ten years hydrastis in this form has been my only injection in gonorrhea. We do not exactly say that hydrastis injected is a specific for gonorrhea, but we do say that when properly used, and in connection with the indicated internal remedy, it will cure 95 per cent. of all cases. Keep the bowels open by laxa-

tive doses of sulphate of magnesia; relieve the ardor urinæ by specific gelsemium, cannabis indica, eryngium, apis, or any other remedy indicated in the case before you. *No stereotyped treatment will fit all cases of gonorrhea.* For the first few days, while the discharge is so free, warm water injections will answer as well as hydrastis, or as anything else—better than astringent injections. In a few days begin by a prescription of the hydrastis one ounce, water and hamamelis, aa, ad. to four ounces. Inject a drachm three or four times a day after urinating. Too much hydrastis in an injection makes trouble. We do not know whether this is due to the hydrastis itself or to the glycerine in the mixture; we believe it to be due to the latter. Occasionally a case will not be completely cured until a small amount of sulphate of zinc or sugar of lead has been added to the injection; but when hydrastis is used, it need not be much, nor is there any danger of stricture. In fifteen years' experience we have *never* had a stricture follow in the wake of the use of this hydrastis in the treatment of gonorrhea.

"Hydrastis of the white alkaloid variety has a most beneficent action in the treatment of chronic coryza, and in all catarrhal troubles, no matter where found, if it can be applied locally. It is as efficient mouth wash as we know in indolent and ulcerative conditions of the mouth, whether they be aphthous or specific. It is superior to any other remedy in many cases of follicular tonsillitis, and as an application in the naso- and oro-pharynx after tonsillitis or any catarrhal disease of those regions. Carefully used in earache, it is excellent. Many times hydrastis of too great strength, as we said above in speaking of gonorrhea, causes a disturbing irritation." (Bloyer.)

"While as a general vegetable tonic, hydrastis is inferior to certain other bitter tonics, as gentian, columba, etc., it will be found superior to them in the treatment of sub-acute and chronic inflammation of mucous membranes, upon which it exerts a peculiar tonic and slightly astringent effect, whether taken internally or applied locally. In the majority of cases its local application is followed by more prompt and positive action than from its internal administration. Whether its power of contracting vessels be owing to a tannic acid, or to a principle similar to that in ergot, which causes a like effect, has yet to be determined. Administered internally it has proved efficacious as a tonic in enfeebled conditions of the alimentary canal with infants and children; in restoring tone to the intestinal mucous coat after severe attacks of diarrhea, dysentery and other debilitating maladies, and in removing the indigestion and restoring the appetite in those cases of indigestion and anorexia of adults due to an abnormal condition of the mucous coat of the stomach. As a local application it has proved valuable in conjuncti-

vitis, in ulcerations of the mouth and fauces, in vaginal and uterine leucorrhea, and in all cases of enfeebled mucous tissues." (King.)

"Hydrastis is primarily a remedy for relaxed and diseased conditons of mucous membranes. Its action is that of a tonic, promoting appetite and digestion, increasing the flow of bile and the normal secretions of the gastro-intestinal tract, while at the same time it lessens over-secretion, corrects unhealthy discharges, and restores the normal tone and function to the relaxed and diseased tissues. Its internal use is indicated in dyspepsias which are characterized by relaxation and over-secretion, with deficient absorption and a tongue heavily coated at the base. It also exerts a beneficial influence in cases of chronic nasal catarrh. Locally it is used, in the form of an infusion or aqueous extract, as an injection in leucorrhea and gonorrhea, as a wash in various forms of sore mouth, and as a douche in nasal and bronchial catarrhs. In its general applications and effects it resembles nux vomica to some extent, while excelling it in some important respects."

"The alkaloids existing in the plant are berberine, hydrastine and canadine, with the derived alkaloid hydrastinine." (French.)

Hydrastis canadensis is alterative, tonic, diuretic, laxative, resolvent, cholagogue and antiseptic. In very large doses it produces excessive secretion from the mucous membranes of the mouth and nose, deranges digestion and causes constipation.

Indications.—Chronic catarrhal conditions of mucous membranes, which are relaxed, and the secretion profuse, thick, yellow or greenish-yellow and tenacious; relaxed and atonic conditions of the mucous surfaces of the mouth and throat; ulceration or erosión of mucous surfaces; irritation, with enfeebled circulation; imperfect recoveries from diarrhea and dysentery.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 20 drops; colorless hydrastis, 5 to 40 drops.

Usual Prescription.—℞ Colorless hydrastis, ℥ii; water, ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Hydrogenii Peroxidum—Peroxide of Hydrogen.

When a solution of the peroxide of hydrogen is thrown into pus cavities the pus cells are destroyed, being completely disorganized. Its effects in this direction, however, are transient. In contact with organic matter the solution becomes decomposed,

with the evolution of oxygen gas. As a deodorant and disinfectant for immediate use it possesses great advantages, for it is prompt in action and does not stain the tissues nor clothing. It coagulates albumen. Its chief use, then, is in medical and surgical cases requiring immediate cleansing. It is of much service used locally in sore throat, diphtheria, membranous croup and in the sore throat of scarlatina. Use it in all cases where pus is abundant, and use it frequently and freely.

It is employed with excellent results in puerperal septicemia, when there is great stench. In such cases it is used in water by means of a fountain syringe.

Care should be had in using hydrogen peroxide in small cavities, such as the ear for otorrhea, and in the urethra for gonorrhea, for the rapid liberation of gas causes such great distension as to give much pain and possibly to injure the structures.

Infants suffering from diarrhea may be allowed to drink freely of cold water containing a few drops of the solution of the peroxide of hydrogen. This agent is used extensively in surgery.

Peroxide of hydrogen is stimulant, antiseptic and disinfectant.

Indications.—Diarrhea; diabetes; atonic dyspepsia; low forms of fever; scrofulous tumors; chronic rheumatism. Locally: Scrofulous, syphilitic or non-specific ulcers; abscesses.

Dose.—Solution consisting of one part of peroxide of hydrogen to twenty parts of water, 1 to 2 drachms.

Hyoscyamus Niger—Henbane.

Hyoscyamus has a soothing influence over the nervous system, and in the treatment of persons of a highly nervous and irritable habit it is frequently indicated. In hysterical convulsions it is a very efficient remedy, and in the treatment of mental disorders it is often a much-needed drug, especially as a means of lessening maniacal stages. In neuralgia and enteralgia it exerts a modifying influence, and in chorea and paralysis agitans it is deemed a remedy of usefulness.

Hyoscyamus is also a remedy of some value in whooping-cough, and in asthma it has been highly recommended. It exerts a relieving influence in colic of various forms, and in vesical tenesmus its action is restraining in character. Cystitis also comes within its range of usefulness, and in incontinence of urine it is used with satisfactory results.

Hyoscyamus is a good hypnotic and anodyne. Unlike most of the anodynes, it does not arrest secretion, but produces sedation and quiet sleep, with no disturbance of function. It is given in cases in which opium would not be well tolerated. In inflammatory conditions of the larger glands it will relieve pain with no serious effects.

"In medicinal doses the hyoscyamus is a stimulant to the cerebro-spinal centers, and may be employed whenever such action is desirable. It is from this that it has its sleep-producing properties, as well as the relief of pain. With some persons the tolerance of hyoscyamus is very great, and even drachm doses exert this stimulant influence.

"It exerts a similar influence upon the vegetative system, in a slight degree favoring every process that is performed under its influence. It is not only stimulant, but it allays irritation. Thus, in some cases where a frequent pulse is dependent upon irritation and debility of the cardiac nerves, it exerts the influence of the special sedatives. It never arrests secretion, but, as before remarked, it favors it. Thus small doses of podophyllin combined with hyoscyamus are not only less irritant but more effectual. So we find, in irritable states of the digestive apparatus, the addition of a small portion of hyoscyamus to the bitter tonics improves their action.

"Because hyoscyamus is poisonous, it is no reason why it should be an active remedy. Poisoning and curing are two different things. Whilst it will be found a valuable curative agent, and quite direct in its action, its influence is rather feeble than otherwise, and too much must not be expected from it. The difference betwen a poison and a medicine in this case is a matter of dose alone, and in this respect it differs from some other medicines." (Scudder.)

Hyoscyamus niger is stimulant to the sympathetic nervous system, anodyne, antispasmodic, diuretic, sedative and laxative. In very large doses it is powerfully narcotic and dangerously poisonous.

Indications.—Delirium with hallucinations; sleeplessness from cerebral hyperemia or excitement, and dreamful sleep from the same cause; spasmodic movements of hysterical origin; spasmodic dry cough; morbid sensitiveness of any organ.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Dose.—2 to 5 drops.

Hypericum Perforatum—St. John's Wort.

Hypericum is a useful remedy when there is intense hyperesthesia in wounds, and in all lacerations, when severe pain shows that the nerves are greatly involved, it is of value. It is also deemed a remedy of merit in the nervous depression accompanying painful wounds, and in the nervous excitement following operations. This agent has been suggested as one likely to be of considerable usefulness in the treatment of spinal irritation.

Hypericum perforatum is sedative, diuretic and astringent.

Indications.—Catarrhal conditions of the urinary passages; suppression of urine; chronic urinary affections; nervous affections with oppression; passive hemorrhages; contusions and lacerations of the tissues; diarrhea and dysentery. Locally, in forms of ointments, liniments and diluted tincture: Tumors, caked breasts; bruises and swellings; ulcers.

Dose.—Fluid extract, 1 to 60 drops.

Usual Dose.—5 to 10 drops.

Humulus Lupulus—Hops.

Lupulin, the active and important constituent of humulus, is a valuable remedy in all forms of nervous excitement, and is especially adapted to the treatment of alcoholism, as well as being a useful remedy in mild attacks of delirium tremens. In hysteria it is used with beneficial results, and in sexual irritation of females it exerts a controlling influence.

In the treatment of fevers lupulin constitutes an efficient means of quieting the excitability of the nervous system and correcting any tendency to delirium. It will frequently procure refreshing sleep in cases of great wakefulness when other approved remedies have failed. Nervous headaches are often relieved by this agent, and in those forms of indigestion in which there is a tendency to gastritis it has been employed with excellent results. The action of lupulin in some respects is similar to that of the vegetable bitters, as it increases the secretions of the salivary and gastric glands, and thereby promotes the appetite and digestion.

"Lupulin is a remedy for nervousness, allaying irritation and producing sleep. Unlike opium, it does not confine the bow-

els. To some extent it allays pain, especially when the pain is due to nervous debility. Thus it is often useful in dysmenorrhea and other painful uterine affections and after-pains. It may be used to give rest in delirium tremens when cerebral hyperemia is present. Its chief field of action, however, is to allay irritation associated with wrongs of the male reproductive organs. It is frequently of service in cystic irritation, causing frequent urination, and is quite efficient in chordee. It has long been valued in nocturnal seminal emissions, being one of the few agents which actually do good service in that affection. Its best service here is to give mental tranquility. Insomnia due to nervous debility or to worry is relieved by lupulin, as is headache associated with cerebral hyperemia." (Locke.)

Hops (the cones) are used locally as an application in the form of a poultice, or enclosed in a bag and moistened with hot water or vinegar. Their anodyne effect when thus used in inflammatory and painful local affections is a source of relief.

Humulus lupulus is sedative, hypnotic, febrifuge, anthelmintic, diuretic and tonic.

Indications.—Impairment of the digestive organs, resulting from abuse; exhaustion and irritability of the stomach; flatulent colic; incontinence of urine; priapism and involuntary seminal emissions; deranged conditions of the brain and nervous system; painful uterine affections; sleeplessness; nervous debility; headache associated with cerebral hyperemia.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 60 drops.

Usual Dose.—5 to 10 drops.

Ignatia Amara—Ignatia Bean.

The most important indication for ignatia is atony. In conditions characterized by excitation it is liable to do more harm than good, but when clearly indicated it has no superior as a nerve tonic and nerve stimulant. It stimulates the heart and blood-vessels, and is often used for this purpose with excellent results. In angina with feeble heart and arteries, the pain coming from distension and want of power to contract, it is above all others the indicated remedy. Ignatia is a valuable remedy in all cases in which there is an atonic nerve force. The patient needing ignatia is anemic—there may be cerebral anemia. He or she is demonstrative, hysterical, or possibly hypochondriacal,

and complaint of sick headache or atonic dyspepsia may be made, and there may be numerous other symptoms, such as pain deep in the loins, and described by the patient as dragging, boring or shooting; there may be gastralgia, gastrodynia, uterine colic or ovarian pain.

Ignatia is a most efficient remedy in all conditions showing atony of the nervous system. General and local paralysis, facial twitchings, neuralgia, mental depression, choreic, epileptic and neurasthenic affections are prominent among the wrongs which receive benefit from its exhibition. In atony of the reproductive organs, whether it takes the form of impotence in the male, or sterility and sexual frigidity in the female, evidence of the curative power of this medicament is promptly shown. In order to meet the indications here given it must be administered in small doses.

"There is no doubt that ignatia improves the vitality and the nervous tone and promotes normal functional activity of the nervous system, especially in that class of patients which are anemic and have cold skin and extremities, with flabby, inelastic tissue, and which are forgetful and lack the power of mental concentration.

"It is prescribed under much the same conditions as nux vomica, but there are certain distinctive diagnostic points which must be made in the directing of these two remedies.

"It exercises a sufficient nerve tonic influence, but has less nerve irritating properties than the last-named remedy. Nux vomica is advised where there is general weakness with lack of tone; where the digestion is impaired, and where, with the weakness, there is severe backache, or where there is marked feebleness of the heart which is not necessarily due to organic change.

"The indications for ignatia amara are very similar to those just named, with the addition that there may be a tendency to mental disorders with suffocating hysterical sensations, or the globus hystericus, and nervous headache in feeble women, with sleeplessness.

"During the establishment of the menses at the age of puberty it is of service, and also at the menopause if the above-named symptoms are present, with other symptoms of nerve irritation. With the nervous system there will be weakness, lack of appetite, and a tendency on the part of the patient to take a very despondent view of the probable outcome.

"A prominent writer says that ignatia is primarily a spinal remedy, that it seems to increase the impressibility of all the senses. It is indicated when there is melancholia, with a tendency

to weep, or when the patient hides his grief and nurses his sorrows, endeavoring to keep them concealed. They are sensitive and easily irritated, but do not disclose their irritation, or have a sense of pressure on the top of the head, have little appetite, and are inclined to renew their grief over causes long passed.

"With nux vomica, the excitability is exhibited by anger, vehemence or irascibility. Patients who are relieved by ignatia will alternately laugh and cry, the spasms increasing in violence until the laughing becomes spasmodic, with inclination to cramping of the hands or chest.

"In extreme cases these cramps may be mistaken for convulsive paroxysms, especially as they are likely to be followed by spasms, but upon examination it will be found that the spasms will be readily relieved on pressure. This remedy will remove the hiccough, flatulency and distress of the stomach, and disorders of the intestinal tract which are present during hysteria." (Ellingwood.)

Ignatia amara is a nerve tonic and a nerve stimulant. Its action in some respects resembles that of nux vomica. In very large doses it is a poison.

Indications.—Deep-seated and dull pain in the epigastrium; weak, empty feeling in the stomach; pain shooting from the right hypochondrium to the shoulders; sexual frigidity in women; epileptiform diseases of women and children; hysteria, with mental depression or excitement; acute pain in the head, and pressure in the medulla; general hyperesthesia of all the tissues; convulsions of children from intestinal irritation, when there is no cerebral irritation; dysmenorrhea and amenorrhea; deep-seated pains in the loins; uterine colic; atony of the reproductive organs; wandering pains in the pelvis.

Dose.—Fluid extract, 1 to 3 drops; specific medicine, 1 to 3 drops.

Usual Prescription..—℞ Ignatia, gtt. v to x; water ℥iv. M. Sig. Dose one teaspoonful every hour to every three hours.

Inula Helenium—Elecampane.

Elecampane exerts a stimulant and tonic influence upon the digestive organs and also upon the skin. It has been used in chronic cutaneous diseases with beneficial results, and in bronchial affections it is deemed a useful remedial agent. Its action is slow, and it must, therefore, be continued for some time in order to secure the benefit of its therapeutic action.

Inula helenium is tonic, stimulant, expectorant, emmenagogue, diuretic and diaphoretic.

Indications.—Gastric atony, with catarrhal condition of the mucous membrane; bronchial affections, with profuse secretion, but without fever.

Dose.—Fluid extract, 1 to 60 drops; specific medicine, 1 to 20 drops.

Usual Dose.—1 to 10 drops.

Iodum—Iodine.

In the practice of specific medication indications for the administration of iodine are frequently seen. It is possible, however, that one of the most important uses of iodine and the iodides is in the treatment of secondary and tertiary syphilis. All the manifestations of this disease, such as syphilitic periostitis, meningitis, endarteritis, gummata, paralysis, etc., are relieved by large doses of the iodides to saturation of the system. Iodine is often employed in the mercurial cachexia, as it combines with and eliminates mercury. Lead is also readily eliminated by a course of treatment with iodide of potassium.

Iodine is extensively used as a local application. The tincture is painted over the skin in cases of superficial acute or chronic inflammations, especially in felon, phlegmon, acute and chronic rheumatism, and in syphilitic, scrofulous and parasitic skin diseases. One part of the tincture to five to ten parts of water injected into cysts, abscesses, ganglion and fistulæ often proves curative. Strong solutions applied until suppuration is produced are said to constitute efficient treatment of bites of rabid animals and other poisoned wounds.

"Iodine in all its forms increases retrograde metamorphosis, and in some degree stimulates excretion. We have no reason to believe that it stimulates blood-making or nutrition, other than as it facilitates the removal of worn-out tissues.

"In quite small doses iodine stimulates the sexual organs and increases their power. For this purpose we may use it in the proportion of: ℞ Tincture of iodine, gtt. xx; simple syrup, ℥iv; a teaspoonful four times a day.

"*Iodide of potassium* is doubtless its most active form as a resolvent and stimulant of waste. There is great difference of opinion with regard to the proper dose, but our choice of dose will depend upon the strength of the patient, the character of the disease, and the rapidity of action desired.

"The indication for this salt is a broad, pallid, leaden-colored tongue, rather full. With this indication it is a very certain antisyphilitic, whilst with a red and contracted tongue it is pretty sure to do the patient injury.

"The *iodide of ammonium* should be selected when stimulation of the nervous system is desirable. Like the others, it increases waste, but it also improves nutrition and does not impair digestion. In secondary syphilis of an asthenic type, with nervous symptoms, this salt will be found an important remedy.

"I would call especial attention to its action in certain forms of chronic headache, depending upon an enfeebled circulation and malnutrition. In some of these cases it gives prompt relief and effects a permanent cure." (Scudder.)

Iodine is tonic, diuretic, diaphoretic, alterative, stimulant, emmenagogue and antiseptic. In very large doses it is an irritant corrosive poison.

Indications.—Chronic enlargement of abdominal viscera, especially the liver, spleen and ovaries; induration and enlargement of the lymphatic and other glands; scrofulous affections, abscesses, ulcers and caries of the bones; chronic tumors of the mammary glands; simple enlargement of the thyroid gland; dry, croupy coughs; acute or "common cold;" chronic articular rheumatism; secondary and tertiary syphilis.

Dose.—Tincture, 1 to 10 drops in sweetened water, after meals.

Usual Prescription.—℞ Tr. iodine, gtt. v to x; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Iodoformum—Iodoform.

Locally iodoform is extensively used as an antiseptic dressing. It is employed in powder or solution as an application in syphilitic and other ulcers and sloughing and ill-conditioned wounds. Inflammatory swellings and enlarged lymphatic glands are benefited by the solution applied and covered with oiled silk, or by the ointment well rubbed in. Externally it diminishes secretion, quiets pain and favors granulation. Applied pure or mixed with sugar, to fresh wounds, it forms a permanent dressing and keeps them aseptic. Great care should be exercised when iodoform is used on extensive fresh wounds or extended serous surfaces, especially in cases of the aged and those afflicted with any form of heart disease. If toxic symptoms appear, the iodoform should

be removed and the wound washed with a weak solution of an alkaline carbonate, and the case treated for iodoform poisoning. Phenol should never be used with iodoform.

Iodoform is anodyne, antiseptic and antispasmodic. Large doses or the absorption of a large amount of the drug produce toxic symptoms, usually of a nervous character.

Ipecacuanha—Ipecac.

In small doses ipecac is an excellent remedy in hepatic dyspepsia, and also in atonic dyspepsia, attended with flatulence. It is remarkably efficient in dysentery, and it is the more efficient the earlier it is administered. In infantile diarrhea it is a remedy of decidedly curative power, and in hematemesis and passive uterine hemorrhage it is employed with marked success. In passive hemorrhage of the stomach it has no superior, and in hemoptysis it is beneficially employed. Ipecac is also of unquestioned value in many diseases of the lungs and bronchial tubes. In pneumonia, particularly in the congestive and declining stages of the disease, it is often serviceable. In bronchitis and phthisis, especially when the secretion is scanty, and in chronic bronchitis when the cough is severe and there is but a moderate amount of expectoration, ipecac constitutes a valuable remedial agent. In spasmodic asthma it has also been employed with satisfactory results. Small doses of ipecac and aconite are many times the only needed medication in cholera infantum, and the same prescription will cure most cases of ordinary summer diarrhea.

In suitable doses ipecac is a very efficient emetic, and it is especially indicated as such when it is desirable through the act of vomiting to empty the air passages, as in spasmodic laryngitis, bronchitis, trachitis, and the early stages of some cases of diphtheria. The action of the drug being comparatively slow, there are other emetics—apomorphine, for instance—which are preferable when it is necessary to empty the stomach quickly, as in the various forms of poisoning. When the stomach contains a quantity of undigested food, however, which causes pain and headache, ipecac constitutes one of our most valuable emetics, since it occasions but little, if any, marked nausea or depression.

In small doses ipecac acts as a stimulant to the stomach. The salivary and gastric glands are also markedly stimulated by it.

Large doses of ipecac are powerfully irritant and emetic, the emesis being the result of both local irritation upon the stomach and a certain action on the vomiting center. The vomiting is preceded by and attended with but slight nausea, although there is usually a marked increase in the secretion of bile and intestinal mucus, full doses of the drug acting not only as an emetic, but also as a purgative and cholagogue.

The drug is eliminated mainly by the gastro-intestinal mucous membrane, although the other secretions take part in the excretory process, the skin being especially affected by the drug, which acts as a mild diaphoretic.

In poisoning by ipecac there is violent vomiting and purging, the discharges containing bile and frequently blood. Among the more important symptoms are abdominal pain, cardiac depression, muscular weakness and greatly diminished reflex irritability. The skin is cold and bathed with perspiration.

The approved treatment of poisoning by ipecac consists of administering tannic acid as the chemical antidote, and the exhibition of opium, belladonna and such cardiac stimulants as may be found necessary.

I was once called to attend a young lady of twenty years who for several months had been in feeble health, with frequent attacks of pain in the region of the stomach, accompanied by distressing nausea. At the time of my first visit she was violently vomiting, the vomited matter consisting principally of mucus and very dark broken-down blood. The attacks of vomiting occurred every three or four hours.

I treated her with such remedies as seemed specifically indicated. Carbo veg. slightly lessened the quantity of blood vomited, but the improvement was not sufficient to constitute a source of encouragement, and other remedies of its class did but little better. Medicines, food and drinks alike increased the severity of the almost constant nausea. She soon became blanched and death-like in appearance, and exhausted to an extent which made it impossible for her to move in bed. Her temperature was subnormal, her pulse 100, small and wiry, and her tongue nearly normal in appearance.

At this stage of the case, I decided to discontinue the treatment which had seemed to have been judiciously selected (and which had received the approval of eminent counsel), and place

her upon minute doses of ipecac alone. Ten drops of the specific medicine were added to four ounces of water, and a teaspoonful of the mixture given every hour. The vomiting gradually became less frequent, the blood less in quantity, and in a few days the vomiting entirely ceased. The ipecac was continued for two weeks, and she made a complete recovery, as is evidenced by the fact that, although ten years have elapsed, she has had no further hemorrhage of any kind.

Since her recovery I have treated many cases of passive hemorrhage, and whether from the stomach, bowels or uterus, ipecac in small doses has been my leading remedy, and it has always yielded most gratifying results. One case I remember as being very severe and unpromising. It was that of a man of seventy years, who was much broken down in health. After suffering from extreme nausea for several hours, he commenced to vomit large quantities of very dark blood. On examination I found his temperature to be normal, pulse sixty, small, and intermittent, and his tongue not materially changed from its natural appearance. Ten drops of the specific ipecac was added to four ounces of water, and a teaspoonful of the dilution administered every hour. The vomiting of blood soon became less frequent, and entirely ceased within a few days, but the ipecac was continued for several weeks. The case was otherwise treated in accordance with the specific indications for remedies, and made a good recovery. The man is still living, and for the last five years of his life he is, in my opinion, indebted to the curative power of ipecac.

"Ipecac is a deserved favorite in infantile pneumonia and acute bronchitis. Pharyngeal, laryngeal, and nasal catarrh are benefited by it, and it is a valuable accessory in the treatment of whooping-cough. The diaphoretic powder which contains this agent is useful in promoting diaphoresis in the forming stage of pneumonia, and in coughs and colds. It lowers the temperature, softens the skin, and subdues pain when present. The wine of ipecac, in dilute solution, has been recommended to be used in spray atomizer for the relief of emphysema, fibroid phthisis, chronic bronchitis, and winter cough, or asthmatic catarrh. It liquefies the secretion and allays the spasmodic vomiting which results from the effort to free the larynx of the tough, tenacious mucus. In short, it is indicated by irritation of the air passages, difficult breathing, difficult expectoration, and asthmatic breathing; hypersecretion in the intercellular air spaces and smaller

bronchioles, with difficulty to expel the mucus, and in inflammation of the parenchyma of the lung." (Felter.)

"Ipecacuanha exerts a specific influence upon mucous membranes, relieving irritation, and arresting the inflammatory process. It also stimulates a better circulation and innervation, increases nutrition, and thus favors functional activity.

"We employ it as a specific in most cases of cholera infantum. It allays irritation of the stomach, gradually checks the frequency of the discharges from the bowels, and restores tone and functional activity. In a large experience in the treatment of this disease, we have found nothing to equal it.

"It is usually prescribed in the following proportions: ℞ Tincture of ipecac, gtt. v to gtt. x; water, ℥iv. A teaspoonful every hour. Aconite is frequently prescribed with it in this case.

"We employ it with very marked advantage in the treatment of infantile pneumonia, associated with aconite and veratrum. In some cases, the prescription of ipecac alone will be sufficient to arrest the disease in two or three days, especially if given in the first stages. It is also employed with excellent results in diseases of the respiratory apparatus of the adult.

"We prescribe it in all cases of muco-enteritis. If there is little constitutional disturbances, ipecac is used alone; if there is some hardness and increased frequency of the pulse, it is given in combination with aconite.

"We employ it in dysentery, especially in the sporadic form from cold. The simple prescription of ipecac is frequently successful, but with much febrile action it is associated with a sedative.

"In small doses we employ it as a stimulant to the entire digestive tract, associating it with the bitter tonics, or the restoratives. For this purpose, it will prove very valuable, especially where there is some gastro-intestinal irritation." (Scudder.)

Ipecacuanha is tonic, stimulant, alterative, expectorant and diaphoretic.

Indications.—Irritation of the stomach, large or small intestines; irritation of the bronchial mucous membranes and air cells; irritation of the mucous membranes with increased secretion, when the tongue is narrow and pointed; profuse menstruation; passive hemorrhage; nausea and vomiting when the tongue is narrow and pointed; hoarseness following coughs and colds.

Dosc.—Extract, ⅛ to 1 grain (the latter is emetic); fluid extract, 1 to 30 drops (the latter is emetic); specific medicine, 1-10 to 30 drops (the latter is emetic); wine, 10 to 30 drops;

syrup, 5 to 60 drops. As an emetic the dose should be given in warm water and repeated every ten to thirty minutes until the desired result is obtained.

Usual Prescription.—℞ Ipecac, gtt. v to xx; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Ipecacuanha et Opii, Pulvis—Dover's Powder.

This preparation constitutes an efficient means of relieving pain in dysentery. It lessens the peristaltic action of the bowels and thus aids the curative action of indicated remedies. In sleeplessness it acts well. It should not be employed when there is a very high temperature. It is also a useful remedy in rheumatism and gout. Warm drinks should not be taken until a considerable time has elapsed after administering this powder, in order to avoid the liability of its causing nausea and vomiting.

Dover's powder is stimulant, antispasmodic, sedative, expectorant, hypnotic and narcotic.

Indications.—Dysentery when there is severe pain; diarrhea resulting from the irritation of indigestible food (after a mild laxative has been employed); catarrhal diseases of the kidneys; neuralgia when the skin is hot and dry; suppression of the menses from cold; hemorrhage of the lungs; dysmenorrhea; sleeplessness.

Dose.—2 to 10 grains every half hour to every three hours, in pills or capsules.

Iris Versicolor—Blue Flag.

Iris versicolor has been extensively employed with much advantage in abnormal conditions characterized by a general fullness of the throat and arteries, together with glandular engorgement, whether it be of the liver, spleen, thyroid or lymphatic glands. In hepatic torpor and poor nutrition it exerts a corrective influence, and in diseases of the liver accompanied by jaundice and white stools, it constitutes a much needed medicament.

Iris exerts a specific influence upon the thyroid gland, and many cases of goitre have been reported as having been cured by it. In goitre it should be used locally as well as internally.

The curative action of iris is believed to depend upon its power of directly stimulating the glandular system, lymphatics and skin. This influence is especially marked on the salivary

glands, pancreas and glands of the upper part of the gastro-intestinal tract, including the liver. As an agent for the promotion of waste and elimination of impurities from the blood, it is very highly esteemed by the most eminent members of the Eclectic school of medicine.

"Iris is one of our best remedies. It is directly stimulant to waste and excretion, and also influences the lymphatic system. It may, therefore, be employed in all diseases in which there is bad blood and imperfect nutrition. I regard it as one of our most certain remedies in the treatment of secondary syphilis.

"It exerts a specific influence in cases of enlargement of the thyroid gland, and has effected cures in very severe cases. Here, as in other cases, we employ it uncombined, giving it internally, and using it as a local application." (Scudder.)

"Iris is a valuable remedy in glandular affections generally; in malarial poisoning with involvement of the spleen and liver; in rheumatism, in catarrhal affections, especially in some cases of diarrhea and dysentery, in scrofulous cachexia, particularly in scorbutic females, who have leucorrhea, dysmenorrhea, etc. In syphilis, any stage, but more especially during its secondary and tertiary manifestations, iris is an admirable remedy. In some cases of stomatitis, and in gastro-intestinal disorders, like cholera morbus and cholera infantum, it is decidedly beneficial when given in small doses. In some cases of skin diseases—those in which iris indications are prominent—it is a most satisfactory remedy. This is markedly true in some cases of eczema, psoriasis, and pustular disease in children. When the mouth is dry and saliva scanty, iris in fair sized doses is efficient. Iris is recommended in prostatic troubles, and in seminal losses in cases in which there is marked debility, with mental complications."

Iris versicólor is diuretic, alterative, laxative, resolvent and antisyphilitic. In very large doses it causes distressing nausea and prostration.

Indications.—Enlargement of the thyroid gland; irritable conditions of the mucous membranes of the digestive tract with an altered secretion which causes a burning distress as though from an acid liquid; vomiting acid liquid, with a burning distress in the esophagus or stomach; enlargement of the spleen; enlargement of lymphatic glands; chronic disease of the pancreas, with sodden, lead-colored tongue; constitutional syphilis.

Dose.—Fluid extract, 1 to 30 drops; specific medicine, ¼ to 5 drops.

Usual Prescription.—℞ Iris, gtt. x to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every two or three hours.

Jacaranda Procera—Caroba.

This is a very efficient remedial agent in all stages of syphilis, but its most prompt action is manifested in old syphilitic ulcers and eruptions. It is valuable as a local application in the form of a decoction in most of the troublesome diseases of the skin. As a general tonic it is also useful.

Jacaranda procera is alterative, tonic, diuretic, sudorific and antisyphilitic.

Indications.—Syphilis in all its forms; syphilitic ulcers (locally and internally); rheumatic affections; chronic skin diseases; scrofulous affections.

Dose.—Fluid extract, 10 to 60 drops.

Usual Dose.—15 to 20 drops.

Jalapa—Jalap.

In large medicinal doses jalap is an efficient remedy in ascites and anasarca. Ten to thirty grains of powdered jalap, two drachms of bitartrate of potassium, one drachm of sugar, and one ounce of water, constitute a pleasant and good hydragogue cathartic dose in many dropsical affections. Jalap is contra-indicated in all inflammatory conditions of the intestines.

Jalapa is hydragogue cathartic and irritant. In very large doses it causes violent vomiting and hypercatharsis, sometimes terminating in death.

Indications.—General torpor of the gastro-intestinal canal; torpor of intestinal glands; dropsical effusions.

Dose.—Powdered root, 15 to 30 grains; extract, 5 to 20 grains; fluid extract, 5 to 30 drops; specific medicine, 5 to 20 drops; resina (containing the active principles of the root), 4 to 8 grains. For children, as a cathartic, from 1½ to 5 grains of the root, in powder or pill.

Usual Dose.—Specific medicine (or a good fluid extract), 5 to 20 drops every two to four hours.

Jateorhize Palmata—Calumba.

Columbo—or calumba—is a valuable remedy in all pathological conditions in which atonicity of the digestive organs is

a prominent feature. It is especially indicated when there is marked irritation of any kind. Calumba is employed as a non-irritating tonic after protracted diarrhea and dysentery with beneficial results. It is also said to be useful in seasickness and in the vomiting of pregnancy.

Jateorhiza palmata is a pure non-astringent bitter tonic.

Indications.—Atony of the stomach; debilitating diseases of the stomach and bowels; chronic malaria with intermittent fever; intestinal flatus; chronic diarrhea and dysentery; muscular debility of young children; sympathetic vomiting, as in pregnancy.

Dose.—Fluid extract, 5 to 60 drops; specific calumba, 5 to 30 drops.

Usual Dose.—5 to 10 drops every four hours.

Jeffersonia Diphylla—Twinleaf.

Twinleaf exerts a stimulant influence upon mucous membranes, increasing their circulation, and checking profuse secretion. It improves the blood and favors normal secretion. It may be employed in any case where any of these influences are desirable. It also exerts a feebly stimulant influence upon the skin, sufficient, however, to make it useful in chronic skin diseases.

Jeffersonia diphylla is alterative, diuretic, diaphoretic and antispasmodic.

Indications.—Chronic rheumatism, especially when the pain is located in the muscles of the back; dropsical affections; diseases characterized by nervous irritability; atonic conditions of the mucous surfaces, with excessive and tenacious secretion; constitutional chronic catarrh.

Dose.—Fluid extract, 1 to 60 drops.

Usual Dose.—5 to 15 drops.

Juglans Cinerea—Butternut.

In very small doses butternut exerts a marked influence upon the skin, and may be employed in either acute or chronic skin diseases. It also allays irritation of mucous membranes, and promotes their normal function. In dysentery and diarrhea it is a frequently indicated remedy, and in some cases of intestinal dyspepsia it gives much better results than the bitter tonics.

Juglans is one of the few cathartics that may be employed to overcome obstinate constipation.

Juglans cinerea is tonic, alterative, diuretic, laxative and cholagogue. In large doses it is cathartic and emetic.

Indications.—Intestinal diseases, with symptoms indicating irritability and a tendency to inflammation; chronic skin diseases; irritation of mucous membranes.

Dose.—Fluid extract, 10 to 60 drops; specific medicine, 1 to 20 drops; juglandin (a black brittle-like starch prepared from juglans), 2 to 5 grains.

Usual Prescription.—℞ Juglans, gtt. x to xv; water, ℥iv. M. Sig. Dose one teaspoonful every two hours.

Kali Muriaticum—Potassium Chloride.

With the possible exception of ferrum phosphoricum, kali muriaticum is the most useful, as well as the most frequently indicated tissue salt. It is an especially valuable remedial agent in the treatment of the second stage of inflammations of serous membranes.

In nasal catarrh which is characterized by a discharge of white, thick phlegm, it has been employed with great advantage, and in stuffy colds in the head, as well as in dry coryza, it acts promptly in a curative direction.

"I use kali muriaticum often with profit in the purulent stage of nasal catarrh. It has proved to me the most satisfactory remedy in acute inflammation of the naso-pharynx in which there is a decided burning dryness. The appearance is that of redness with marked thickening, almost as though the mucous membranes were solidly infiltrated." (Ivins.)

"This is one of the most effective remedies I have ever used for chronic catarrhal inflammations of the middle ear, especially the form designated 'proliferous.' In chronic suppuration it reduces proliferation and hastens repair." (Houghton.)

In aphtha, thrush, white ulcers in the mouths of little children or nursing mothers, as well as in canker, excoriations and rawness of the mouth, this trituration of the chloride of potassium constitutes a superior medicament, and in swollen glands about the jaws and neck it seldom fails to give speedy relief. The swelling in inflammation of the tongue also yields to its curative influence.

Dr. Kinnett, in referring to the power possessed by kali muriaticum over the various forms of edema, in part says:

"I have used kali muriate in edema of the cellular tissues and have reduced the swelling in many cases where other well-known remedies for this condition had failed. In one very severe case of edema, accompanied with heart disease, where usually apocynum is prescribed and was prescribed and did no good so far as we could determine, I prescribed kali muriate, and the edema was all gone in a few days. The indications are just as clear for the administration of this drug as for *any other specific medicine* we possess, and can be relied upon with as much certainty. I have prescribed this remedy ranging from the crude drug in solution, to the same amount of the third decimal trituration, and may say that I am as well pleased with the trituration as with the crude drug, and am surprised often to see what small amount of the drug will accomplish the work. By all means do not neglect this remedy to prevent plastic exudates, for it only needs a fair trial to convince the observer that it will do all that has been claimed for it."

In sick headache, when the tongue is covered with a white coating, and there is vomiting of a white phlegm, this drug is employed with marked benefit.

Kali muriaticum is very extensively employed in the treatment of diphtheria by Homeopathic practitioners, and many Eclectic physicians have also found it effective in this disease. Dr. W. E. Kinnett, a very careful observer of the therapeutic action of drugs, in speaking of his experience with this potassium preparation, says:

"I would not attempt to treat a case of pneumonia, diphtheria, croup or, in fact, any other inflammation, whether idiopathic or traumatic, in any part of the body without this remedy from first to last as the main remedy. In hepatitis, cellulitis and in cases of that fashionable disease, appendicitis, or any other, it is this drug which, if administered early, will avert suppuration. I have treated many cases of pneumonia, both in children and in adults, with this drug and ferrum phos., no other drugs being used from beginning to end, and can say the same in many cases of diphtheria. There is no trouble to get children to take this medicine, and besides it is very effective. I have used no other remedy for croup for years except these two drugs, and in this disease I usually put a teaspoonful of each of the 3x trituration into a glass half full of water, and administer a teaspoonful every ten minutes until relieved, and then every hour till well. It acts promptly and effectually."

Some Eclectic writers who have also had large experience in the use of the chloride of potassium in the treatment of diphtheria apparently are not as confident of its effectiveness in all cases of this disease as Dr. Kinnett seems to be, as will be seen by an abstract from a letter written to the author of this article by Dr. F. H. Williams, who is also a very thorough investigator of drug action. Dr. Williams says:

"I have tried kali mur. faithfully, in the third trituration, and I am convinced that it will not cure bad cases of diphtheria. We should endeavor to separate the diagnostic points in relation to their symptoms. I have seen diphtheritic cases that spot the tonsils, and possibly the sides of the pharynx, with a white multiple membrane—*always white and moist*—that kali mur. 3x, will cure. But my experience shows that the drug is useless in the gray membranes that start from one nidus and largely involve the uvula."

In tonsillitis kali mur. is a very efficient remedial agent. It should be administered as soon as the swelling appears. It is also a remedy of merit in other inflammatory wrongs of the tonsils and throat, especially when grayish patches, spots or deposits are prominent features of the case. In scarlet fever it is often a much needed medicament, and it is said to possess a power of preventing this disease which is fully equal to that possessed by belladonna. In speaking of this property of the drug, Dr. Holbrook says:

"I have recently treated a case of scarlatina with kali mur. alone, it making a good recovery. I gave the remedy to the rest of the children in the family, with the result that none of them were attacked by the disease, though, they were almost constantly with the sick child."

Kali muriaticum is a remedy of marked curative power in many gastric wrongs, especially when there is constipation, with vomiting of thick, white phlegm, and a bitter taste in the mouth. In jaundice, characterized by the foregoing symptoms, its influence is promptly curative. It is also an excellent remedy in jaundice caused by catarrh of the duodenum, especially when the stools are very light in color. In all liver affections in which there is a sluggish action of the organ, accompanied by pain in the right side, pale yellow evacuations, constipation and coated tongue, this remedy will speedily give corrective results.

In acute inflammation of the bladder, especially when there is swelling and a discharge of thick, white mucus, the chloride of potassium constitutes a most useful remedial agent, and in chronic cystitis it exerts an action which is curative in its direction. Kali muriate is an efficient remedy in gonorrhea, and it is regarded by some physicians as essential to a good treatment. It is especially indicated in cases in which swellings exist, whether resulting from subcutaneous or interstitial exudation. In suppressed, tardy or too early menstruation, especially when the discharge is excessive, dark, clotted, or tough, or tarlike in appearance, this drug exerts an influence which makes for normal activity, and in leucorrhea, when the discharge consists of milky-white, thick and non-irritating mucus, it constitutes an efficient remedial agent. In mastitis it exerts a restraining influence over the swelling, which is often much needed.

In loss of voice or hoarseness its action is much like that of collinsonia, and it often serves an excellent purpose. In the second stage of bronchitis, when thick, white phleghm of a fibrinous character forms, the chloride of potassium constitutes a remedy of corrective power. In croup it exerts a marked influence over the membranous exudation, and in false croup it is often the only needed medicament. It is especially indicated in the second stage of pneumonia, when the expectoration is viscid and there is fibrinous exudation into the lung substance. As a remedy in the second stage of pleurisy, when there are plastic exudations and adhesions, this remedial agent has been highly recommended as a means of completing the cure. When there are wheezing or rattling sounds of air passing through thick, tenacious mucus in the bronchi, and which is raised with great difficulty, kali muriate affords much relief.

In rheumatic fever, with exudation and swelling around the joints, this drug has been employed with satisfactory results. Its influence in such cases is said to be due to its power of restoring the non-functional cells of the excretory and absorbing structures to normal activity.

Kali muriate has been employed in the treatment of typhoid fever, and has given very satisfactory results, especially when there was great looseness of the bowels, the stools being light yellow or flocculent. It also exerts a relieving influence in abdominal tenderness and swelling.

In the second stage of abscesses, boils, carbuncles, eczema, pimples, erysipelas, and many other similar conditions, when interstitial exudation has taken place, it is said that the chloride of potassium will cause the swelling to disappear before the formation of pus. It is also a useful remedy in glandular swellings and follicular infiltrations. In ulceration of the os and cervix uteri, characterized by a thick, white secretion, this remedial agent has been employed with results which were unmistakably curative.

Potassium *chloride* must not be confounded with potassium *chlorate.*

Indications.—White or gray coating at the base of the tongue; white or gray exudations; glandular swellings; discharges or expectorations of a white, thick fibrinous slime from any mucous surface; grayish patches or spots in throat or on tonsils; jaundice, especially when there is pain in the stomach or intestines; pale yellow evacuations and yellow urine, with abdominal tenderness and swelling; diarrhea, when the stools are pale yellow or clay colored; inflammation of the bladder, when there is a discharge of thick white mucus; rheumatic fever, with exudation and swelling around the joints; abscesses, boils and carbuncles; plastic exudations and adhesions; hard, harsh and hacking coughs; short and spasmodic cough; wheezing râles, or rattling sounds in the air passages, caused by thick, tenacious mucus in the bronchi.

Dose.—Third trituration, 5 to 15 grains.

Usual Prescription.—℞ Kali muriaticum, 3x, gr. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every half hour to every two hours.

Kali Phosphoricum—Potassium Phosphate.

This efficient salt is frequently indicated in various wrongs of life, but it is in the abnormal conditions of the nervous system, often referred to as neurasthenic, that the phosphate of potassium has become recognized by many skilled physicians as an indispensable remedial agent. In all nervous states evidencing a want of nerve power, such as prostration, loss of mental vigor, depression, brain-fag and softening of the brain, it constitutes a medicament of curative power.

In all pathological conditions characterized by depression, general irritability, or loss of memory, it exerts an improving influence, and in hysteria from sudden emotion or false impressions, this agent has been employed with beneficial results. In many cases in which stupor, low delirium, sleeplessness, restlessness or mental aberrations are prominent features, kali phosphoricum is believed to exercise a corrective power. In the condition known as "night-terrors," and in which many children apparently suffer from extreme fright, the phosphate of potassium constitutes a curative agent which should never be neglected.

In referring to the wrongs of the brain and nervous system in which kali phosphoricum has been the means of producing marked improvement, Dr. Carey in part says:

"The gray matter of the brain is controlled entirely by the inorganic cell salt, potassium phosphate. When nervous symptoms arise, due to the fact that the nerve fluid has been exhausted from any cause, kali phos. is the only true remedy. To my mind this remedy is the most wonderful curative agent ever discovered by man. Let the overworked business man take it and go home good tempered. Let the weary wife, nerves unstrung from attending to sick children or entertaining company, take it and note how quickly the equilibrium will be restored and calm and reason assert her throne."

The phosphate of potassium is employed with marked advantage in vertigo and giddiness resulting from nervous exhaustion and weakness, and in cerebral anemia it is a very efficient remedy. In conditions in which pains and weight in the back of the head, together with a feeling of weariness and exhaustion, are prominent symptoms, this agent will aid much in the treatment.

In various forms of paralysis kali phosphoricum can safely be regarded as one of our most reliable drugs. Dr. W. E. Kinnett has employed the remedy in many of these cases with wonderful success, and has often found magnesia phosphorica indicated in connection with this potassium salt. In reporting a case of paralysis treated with these remedies the doctor says:

"The patient was absolutely helpless so far as doing anything for himself was concerned. His arms and legs were useless to him, and seemed to be in the way. His hands and wrists were out of shape, as were also his legs and feet. He could neither feed nor dress himself. Could move neither hand nor foot and

was as helpless as a baby. He could sit propped up, but could not in any manner help himself. He could talk some and eat some when soft foods were put into his mouth. It was certainly an unpromising outlook, and I sincerely wished I had not promised to see him. I felt that he was beyond human aid and told him that it was exceedingly doubtful if I or anyone else could help him, but if he would consent to a long period of treatment I would make an effort to help him some, and to this he readily consented; the case of a drowning man catching at a straw.

"I prescribed for him kali phos. 3x, five grains every four hours, and magnesia phos. 3x, five grains every four hours, alternating with the kali phos. The medicines were faithfully administered to him from very early in the morning till very late at night. In about a month he could hold knife and fork or spoon and feed himself, or hold a cup, with the handle, to drink from. In two months he could walk behind a chair, pushing it before him, and could dress himself, buttoning his clothes and tying his shoes. Awkwardly, of course, but he did it. In ten weeks he was walking wherever he chose—slowly and deliberately—and at the end of three months from the first dose of medicine he went to work and could carry a ten-quart pail of water in each hand."

In affections of the ear, especially when there is a discharge of a foul, ichorous, offensive, fetid or sanious character, the phosphate of potassium exerts a corrective influence. Offensive discharges from any part constitute an important specific indication for this drug. In the epistaxis which frequently occurs in the weak and delicate person, the action of this agent is decidedly restraining in its nature, and in stomatitis, when the breath is offensive, as well as when there are ash-gray ulcers in the mouth, it is often a most useful remedy. In diseases of the throat characterized by large and sore tonsils, with white solid deposits resembling diphtheritic membrane, hoarseness and loss of voice, kali phosphoricum is a remedy of unmistakable efficiency, and in indigestion with nervous depression it has been employed with satisfactory results. It is also a remedy of value in diarrhea which is painless and causes great prostration, especially when the discharges are bloody, fetid, and much like rice-water.

In amenorrhea with depression, lassitude, and general nervous debility, accompanied by pain in the ovaries, the phosphate of potassium is deemed a medicament of considerable value, and when the menses are premature and profuse, especially in ner-

vous subjects, it is often a much-needed remedy. It is also employed with advantage in dysmenorrhea, and Dr. Whittier reports a case of several years' standing which was completely cured by him with this drug after many approved remedies had failed to benefit the patient. In leucorrhea, when the discharge is yellowish, acrid and scalding, its action is corrective, and in incontinence of urine it is a useful agent.

In abscesses, carbuncles, and other suppurative processes, when there are asthenic symptoms, and the suppurative action is unhealthy, the pus ichorous, bloody, offensive and dirty, kali phos. exerts an improving influence, and in marasmus, especially when the stools have a putrid odor, it has been used with beneficial results.

In large and frequently repeated doses, the phosphate of potassium has been employed as a means of relieving the difficult breathing and depressed condition of the nervous system in nervous asthma, and with satisfactory results. Hay asthma and hay fever are also said to be modified by the administration of this drug.

In diabetes mellitus kali phos. may well constitute a part of the treatment, as it exercises an influence which makes for normal function of the medulla oblongata and pneumogastric nerve, thus favoring digestion and normal activity of the stomach and lungs.

As a part of the treatment of the morphine habit the phosphate of potassium has been employed with more or less success. In reporting the case of a lady who had become a morphine fiend, Dr. B. A. Sanders in part says:

"I had used everything I could find in any school of medicine without benefit to my patient, and felt thoroughly discouraged, when I happened to think of kali phos. I started her taking it, and at the same time stopped all other nerve medicine. The change was wonderful. The sharp, intense headache, sleeplessness, wild, staring eyes, brown, dry tongue, and that horrible sinking 'all-gone' sensation, rapidly yielded to the remedy, and she made a good recovery. She is now—four years later—a remarkably vigorous, healthy and happy woman, without the least desire for the opiate, and has, as she expressed it, a 'perfect terror of morphine.' I ascribe all the cure to kali phos., for the other treatment could not have been completed had it not been for this salt."

In puerperal fever, especially when there are illusions and absurd notions, or a tendency to violent insanity, this constitutes a very useful medicine. In septic hemorrhage it has also been employed with advantage. In fact, it is a remedy of merit in all cases in which there is evidence of vitiation of the blood, and in which the system seems to contain typhoid poison.

In intermittent action of the heart, with morbid nervous sensitiveness, this agent has been administered with marked benefit.

Indications.—Despondency and nervous dread, without cause; brain-fag from overwork; delirium tremens; vertigo and giddiness from nervous exhaustion and weakness; pain and weight in the back of the head, with feeling of exhaustion; discharge of foul, offensive pus from the ears; loss of power in facial muscles; tongue white and slimy; edges of tongue red and sore; predisposition to bleeding of the gums; tonsils large and sore, with solid deposits on them; hoarseness and loss of voice; flatulence, with distress about the heart; diarrhea, when the stools are putrid, or like rice-water; putrid and typhoid dysentery; paretic condition of rectum and colon; menses premature and profuse in nervous females; menses irregular, scanty, offensive and very dark; hysteria, with sensation of a ball rising in the throat; paretic conditions of the bladder, and incontinence of urine from paralysis of the sphincter of the bladder; yellow urine; functional wrongs of the heart, accompanied by a weak, nervous and anxious state, and when the pulse is intermittent, irregular and below normal; palpitation of the heart, with sleeplessness and restlessness; infantile paralysis; walking in sleep in children; fetid, debilitating, profuse perspiration; typhoid conditions, especially when the tongue is brown and dry and there is delirium; putrid conditions of the throat, especially in scarlet fever; general debility and exhaustion; dirty, foul, ichorous discharges of pus.

Dose.—Third trituration, 5 to 15 grains.

Usual Prescription.—℞ Kali phosphoricum, 3x, gr. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every half hour to every two hours.

Kali Sulphuricum—Potassium Sulphate.

The sulphate of potassium often constitutes a remedy of decided usefulness. An eminent investigator of drugs says that

it is the function remedy of the epidermis and of the epithelium, and that a deficiency of this salt causes a yellow slimy deposit on the tongue, decidedly yellow or greenish discharges, secretions of watery matter from the mucous surfaces, and epithelial or epidermal desquamation. It is believed that the yellowness is due to fatty degeneration of inflammatory products and of effete epithelium. It is especially indicated in all abnormal conditions caused by retrocession of eruptions.

Kali sulphuricum has been employed with marked advantage in rheumatic arthritis, especially where the pains settle in one joint and then in another, and in rheumatic fever it is deemed a remedy of curative power.

"In wandering, shifting muscular pains of a rheumatic or neuralgic character, worse in the evenings or in heated rooms, and in cases of long standing rheumatism with debility and soreness of muscles, this remedy sometimes works wonders." (Kinnett.)

In bronchial asthma, with yellow expectoration, the sulphate of potassium has been employed with very satisfactory results, and in bronchitis when the expectoration is distinctly yellow, watery and profuse, or when it is greenish, slimy and watery, this drug exerts a needed influence. It is also an efficient remedy in diarrhea when the stools are yellow, slimy, watery or purulent, and the tongue has a yellow coating, especially at its root, as well as when the discharges are black, thin and offensive.

In affections of the eyes indications for kali sulphuricum are often seen. In cases in which the eyelids are covered with yellow crusts, or in which there is a discharge of yellow or greenish matter, with purulent slime, or yellow, watery secretions, it constitutes a remedial agent of corrective power. In ophthalmia neonatorum, especially when there is a thin yellow or sanious discharge, with closely adherent membrane on the palpebral conjunctiva, it has often been employed with curative effect, and in some cases it has proved useful after other approved remedies have failed. It is also deemed an agent of merit in abscesses of the cornea, and especially so in cases of pus in the anterior chamber.

Kali sulphuricum constitutes a medicament of great value in chronic catarrh of the stomach, especially when the tongue is covered with a yellow coating, and in dyspepsia, when the tongue

has a yellow coating and there is a sensation of pressure as of a load and fullness at the pit of the stomach, its action is curative in its direction. It is also useful in cases of indigestion characterized by a gathering of water in the mouth.

"Kali sulphuricum is a very good remedy in chronic catarrh of the stomach where the tongue is slimy and coated yellow. In all these cases where the water accumulates in the mouth, natrium muriaticum should be prescribed with it. Pain that commences in the stomach and wanders through the intestines and finally settles in the right hip just above the crest of the ilium, will be relieved by this remedy." (Palmer.)

In jaundice caused by gastric catarrh it exerts a needed influence, and in scarlet fever when there are discharges of foul ichorous pus from the ears, or fetid discharges from any of the mucous surfaces, its corrective action is unmistakable. In gleet and old cases of gonorrhea it has been used with marked success, and in leucorrhea when the discharge is yellow, greenish, slimy or watery, the sulphate of potassium is deemed a remedy of superior merit. It is also useful in pathological conditions which sometimes follow scarlatina, and especially when the urine is albuminous.

In the eruptive diseases, when the eruption is suppressed, or suddenly recedes, and there is a harsh and dry skin, kali sulph. has often acted correctively.

In metrorrhagia, or when the menses are too late and too scanty, with weight and fullness in the abdomen, accompanied by headache and a yellow-coated tongue, kali sulphuricum is often employed with more than ordinary success. Tuberculous ulcers, with continuous oozing of pus and lymph, are often much improved by the use of this drug.

In inflammation of the lungs, especially when loose yellow rattling phlegm or watery mucus is coughed up, the sulphate of potassium exercises a most desirable influence, and in rattling cough accompanied by a suffocative sensation, its action is relieving in character.

Indications.—Yellow, slimy coating on the tongue; yellow, mucous discharges; colds, with yellow, slimy expectoration and yellow or greenish discharges from the nose; chronic catarrh, with yellowish secretion; jaundice, from gastro-duodenal catarrh; diarrhea, when the discharge is yellow, slimy, watery and puru-

lent; leucorrhea, when the discharge is yellow, greenish and slimy; menses tardy and scanty, with a feeling of weight and fullness in the abdomen and a yellowish coating on the tongue; bronchial asthma, with yellow expectoration; bronchitis, when the expectoration is distinctly yellow, greenish, slimy or watery and profuse; catarrhal cough, with free yellowish expectoration; intermittent fever, with yellow, slimy coated tongue; eczema, when the discharge is yellow, greenish and watery; burning or itching papular eruption; tuberculous ulcers, with a continuous oozing of yellow pus and lymph.

Dose.—Third trituration, 5 to 15 grains.

Usual Prescription.—℞ Kali sulphuricum, 3x, gr. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every half hour to every two hours.

Kalmia Latifolia—Mountain Laurel.

Mountain laurel has been employed in cardiac hypertrophy with advantage, and in palpitation of the heart caused reflexly by gastro-intestinal wrongs it has been found a useful remedial agent. In the aching pain in the back from which many women suffer during menstruation its relieving influence is often gratifying to the patient. It is a remedy of value in shifting rheumatic pains, and its sedative action has often been found useful in fevers and inflammations. It is a good remedy in some forms of diarrhea, and in dysentery it has been recommended. In constitutional syphilis it also exerts an influence which makes for improvement.

"Kalmia is an efficient remedy in primary or secondary syphilis, and will likewise be found invaluable in febrile and inflammatory diseases, and hypertrophy of the heart, allaying all febrile and inflammatory action, and lessening the action of the heart. In active hemorrhages, diarrhea, and dysentery, it has been employed with excellent effect. I have extensively used this agent, and regard it as one of the most efficient agents in syphilis; and have, likewise, found it very valuable in inflammatory fevers, jaundice, and ophthalmia, neuralgia and inflammation." (King.)

Kalmia is sedative, astringent and antisyphilitic.

Indications.—Atonic chronic inflammations; hypertrophy with excessive action of the heart; obstinate chronic irritation of mucous surfaces; febrile and inflammatory diseases; shifting rheumatic pains; aching pains in the back.

Dose.—Fluid extract, 10 to 30 drops; specific medicine, ½ to 5 drops.

Usual Prescription.—℞ Kalmia, gtt. xx; water, ℥iv. M. Sig. Dose one teaspoonful every three hours to four times a day.

Lavendula Vera—Lavender.

Lavender exercises a kindly influence upon the digestive apparatus and the nervous system. It is used in nervous depression with advantage, and in hysterical conditions it is often a useful remedial agent. Lavender is somewhat extensively and beneficially employed as a stimulant for children and feeble women.

Lavendula vera is carminative, tonic and stimulant.

Indications.— Flatulency; palpitation; nervous depression; hysteria.

Dose.—Spirit, 30 to 60 drops; compound tincture, 30 to 60 drops; oil, 1 to 5 drops.

Lappa Officinalis—Burdock.

Burdock acts directly and very kindly upon the genito-urinary organs, increasing secretion and removing irritation. Its action in this respect is especially beneficial in some forms of chronic disease. It is also a remedy of corrective power in bronchial irritation, and in coughs it exerts a checking influence. In any disease presenting the general indications for that class of remedies known as alterative, lappa may be employed with an assurance of beneficial results.

"This agent is a much neglected alterative. It directly influences the renal apparatus, relieving irritation, increasing the flow of urine, and assisting in eliminating morbid material. It may be employed for the removal of worn-out tissues when the saline renal depurants would do harm.

"A tincture of the seeds, long administered, is said to be one of the best of the few remedies for psoriasis. It certainly exerts a favorable influence upon dyspepsia, with a cachectic state of the blood. Both cough and bronchial pulmonary irritation are relieved by it when an alterative is demanded." (Locke.)

Lappa officinalis is diuretic, alterative, aperient and sudorific.

Indications.—Glandular engorgement; dropsy of renal origin; obstinate chronic cutaneous eruptions; scrofulous, syphilitic,

gouty and rheumatic difficulties of long standing; irritation of the urinary apparatus, with lessened secretion of urine.

Dose.—Fluid extract, 30 to 60 drops; specific medicine, 5 to 30 drops.

Usual Prescription.—℞ Lappa officinalis, gtt. xxx to ℥iv; water, ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Leptandra Virginica—Culver's Root.

Leptandra improves the tone of the entire glandular system, and is said to increase the solid constituents of the bile. In dyspepsia resulting from atony of the stomach or liver, it exerts a curative influence, and in chronic diseases of the mucous surfaces it is a remedy of value. In intermittent fever when there is great feebleness it is employed with satisfactory results, and in all diseases, regardless of name, which are characterized by drowsiness, cold extremities, dull aching pain in the region of the liver, sallow skin and bitter taste in the mouth, it constitutes a medicament which is often beneficially employed.

In diarrhea and dysentery this agent has proved very beneficial as a cathartic, one active dose frequently effecting a cure. Leptandrin triturated with sugar of milk constitutes a convenient form for the administration of the remedy. The third trituration is efficient, and but slightly unpleasant in taste.

"The leptandra exerts a gentle stimulant influence upon the entire intestinal tract, and its associate viscera, and in medicinal doses strengthens functional activity. Its action in this direction is so persistent that it might be called a gastro-intestinal tonic. There are some functions not well understood, as of the liver and spleen, and it would not much improve our knowledge to say that it acted upon these. But it exerts a marked influence in those diseases in which there is enfeebled portal circulation, and tendency to stasis of blood. Thus in some cases of typhoid fever occurring in malarial localities the leptandra has proven a very valuable medicine.

"We do not believe there is any remedy that acts upon the *liver,* according to the old idea of medicine. It has been conclusively proven that preparations of mercury do not, and that podophyllin does not; and it is probable that we will have to give up the idea of cholagogues entirely. There is no doubt in my mind, however, that leptandra does influence the function of the liver; not always to increase secretion of bile, but rather to bring

the organ back to normal functional activity, whatever may have been the deviation.

"Associated with the milder bitter tonics, the leptandra improves the digestive function, and stimulates normal excretory action from the bowels. This latter influence sometimes makes it a valuable adjunct to those remedies called alterative." (Scudder.)

Leptandra virginica is tonic, alterative, laxative and cholagogue. In very large doses it causes vomiting, vertigo and bloody stools.

Indications.—Functional diseases of the liver; dull, heavy pain in the right hypochondrium; fullness of the abdomen; chronic diarrhea and in cachectic diseases.

Dose.—Fluid extract, 1 to 20 drops; specific medicine, 1 to 20 drops; extract, 2 to 4 grains; leptandrin, ½ to 2 grains.

Usual Dose.—2 to 10 drops.

Liatris Spicata—Button Snakeroot.

This agent constitutes a most excellent tonic when the circulation is poor and there is an abnormal condition of the skin and kidneys. It acts as a stimulant to all of the excretory organs.

Liatris spicata is alterative, tonic, stimulant, diuretic and aromatic.

Indications.—Dyspepsia when there is a torpid condition of the kidneys; nephritic diseases; dropsy; spasmodic conditions of the bowels; colic in children; calculous affections.

Dose.—Fluid extract, 30 drops to 2 drachms.

Usual Dose.—30 to 60 drops.

Libradol.

Libradol, as an application, affords a very efficient means of relieving pain and inflammation, and is extensively employed in pneumonia, bronchitis, croup, pleurisy (with or without effusion), ovaritis, orchitis, tonsillitis, acute pharyngitis, some forms of rheumatism (inflammatory) and boils. It is also a curative agent in localized pain, along nerve courses, in joints, and in the muscular structures, as in some forms of rheumatism (sub-acute, non-inflammatory, articular, etc.), lumbago, facial neuralgia, subscapular neuralgia, intercostal neuralgia, and pleurodynia.

Indications.—Pain with or without swelling or inflammation;

inflammation with serous or mucous exudation; sharp lancinating pain in chest, aggravated by respiratory or other movements; congestion and engorgement of parts; dyspnea; soreness in the pectoral region; dull aching pain; subcutaneous and thecal inflammations; pain of syphilitic nodes.

Lilium Tigrinum—Tiger Lily.

Tiger lily exerts a special influence upon the female reproductive organs, and is employed with marked benefit in diseases peculiar to women. In chronic inflammation of the uterus it constitutes a medicament of great usefulness, and in prolapsus uteri, and other displacements, its tonic action is especially valuable as a means of restoring the parts to their normal condition. It is a very efficient remedy in all debilitated states of the female organs of generation. Tiger lily has also been used in some dropsical conditions with good results. It should be given a more careful study than it has heretofore received.

Lilium tigrinum is tonic and nervine.

Indications.—Chronic inflammation of the uterus; nausea caused by uterine disease or pregnancy; amenorrhea, with burning pain in the ovaries; neuralgic pains in the uterus, ovaries or mammary glands; acrid leucorrhea; abnormal sensations in the region of the heart caused by wrongs of the uterus; neuralgic pain extending from the uterus and ovaries down the inside of the thighs; a sense of weight and downward pressure in the lower abdomen; dysmenorrhea; headache caused by uterine disease.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Dose.—5 drops every two or three hours.

Lithii Benzoas—Benzoate of Lithium.

The benzoate of lithium is often employed as a means of reducing the amount of uric acid excreted in the urine, by a reduction of the quantity in the blood. It is also used to retard the formation of hepatic calculi, and thus prevent the recurrence of hepatic colic. In cystic irritation from the presence of renal sand it has frequently been employed with advantage.

Benzoate of lithium is diuretic.

Indications.—Uneasiness in the loins, extending to the bladder; irritable states of the neck of the bladder, due to the

presence of insoluble uric acid or urates; fullness and tension in the perineum, and a desire to urinate frequently, with difficulty in passing urine; passage of mucus with phosphates from the bladder; renal or cystic deposits caused by the presence of an excess of uric acid; tendency to gouty paroxysms.

Dose.—5 to 20 grains in a tablespoonful of water.

Usual Dose.—5 to 8 grains in a tablespoonful of water, three or four times a day.

Lithii Bromidum—Bromide of Lithium.

The bromide of lithium is the most hypnotic of all the bromides. Its use is not followed by the action on the heart which frequently follows the continued use of the bromide of potassium. Like the other bromides, it is useful in allaying excessive brain activity, the headache and insomnia of cerebral congestion usually yielding to its influence. It is contraindicated in great debility, anemia, or fatty or weak heart, with low arterial pressure. It should be given in solution.

Bromide of lithium is hypnotic, sedative and antilithic.

Indications.—Uric acid diathesis, accompanied by painful conditions, as complicating neuroses; tinnitus aurium, with pain in the temporal region and sleeplessness; insomnia of cerebral congestion.

Dose.—5 to 20 grains, three or four times a day.

Usual Dose.—5 to 10 grains in water, three or four times a day.

Lithii Salicylas—Salicylate of Lithium.

This agent is among the best of our remedies for rheumatism. Although it is much like the salicylate of sodium, it contains more salicylic acid than the sodium salt, and has less toxic effects. The presence of lithium increases the therapeutic action of the salicylic acid.

Indications.—The specific indications for this salt have not been well defined, but it may be used with advantage in acute, sub-acute and chronic articular rheumatism, true gout and uric acid gravel.

Dose.—1 to 60 grains, but not to exceed two and one-half drachms a day.

Usual Dose.—1 to 8 grains, in solution, powder or tablet,

three or four times a day. It may be administered in Vichy, seltzer and other mineral waters; and also in doses of fifteen grains a day in apollinaris water, for long-continued use in uric acid gravel.

Lobelia Inflata—Indian Tobacco.

Lobelia has always been employed somewhat extensively by Eclectic physicians. Dr. Wooster Beach, the founder of the Eclectic school of medicine, in referring to lobelia, in his "American Practice of Medicine," said:

"Lobelia was discovered by Lobel, a noted botanist, and it was named after him. It has long been used by the Indians of this country as an emetic. Samuel Thomson and his followers employ it for almost every disease as a puke, but this indiscriminate use of it is wrong. Like other plants, it is good when judiciously used. It causes free emesis, but is very prostrating to the system when given alone, sometimes causing alarming appearances, although the patient soon recovers from its effects. It is best combined with those articles which modify its action, in which manner I administer it. I combine it with ipecac and blood root, which makes an excellent emetic in all cases where its use is required. It enters into the common emetic powder."

The emetic powder referred to by Dr. Beach was composed of four ounces of ipecac, four ounces of lobelia and two ounces of blood root.

Lobelia in small doses is a powerful vital stimulant. It is especially useful in diseases in which there is capillary venous congestion. In pulmonary complaints it is often employed with great satisfaction, and in congestive conditions it improves innervation and the circulation. In spasmodic asthma it is regarded as a leading medicament, and in convulsions it is often employed with gratifying results. In pneumonia and pleurisy it is frequently indicated, and in cases in which the respiration is oppressed its influence is corrective. Chronic pneumonia, bronchitis and laryngitis are all conditions in which lobelia is likely to be a needed remedy, and in chronic catarrh, coughs and all forms of irritation of the respiratory tract it is deemed a remedy of merit. It relaxes the tissues and favors expectoration when a large quantity of mucus is secreted and yet there is want of power to remove it. It is also employed in whooping-cough with some relieving effect.

Lobelia, in doses of ten to thirty drops, is an efficient remedy in angina pectoris, neuralgia of the heart and spasm of the bronchi. In rigidity of the os uteri, vagina or perineum, it should be given in doses of one to three drops every fifteen minutes until nausea results, when the dose should be decreased and the interval between the doses lengthened.

"To obtain the curative effects of a lobelia emetic, the remedy should be given in small quantities frequently repeated, as it can be absorbed from the stomach, so that emesis, when it does occur, shall be from the general influence of the remedy in the blood, and not from its local irritant influence upon the stomach. Many physicians fail to obtain the benefit they have reason to expect, because of its improper administration; it is not absorbed, but simply irritates the stomach.

"Lobelia is one of the most powerful vital stimulants in the materia medica. It strengthens the circulation, improves innervation, and by its influence upon the sympathetic nervous system gives increased activity of all the vegetative functions. These influences come from minute doses, one drop or less. I usually prescribe it in this proportion: ℞ Tinct. lobelia, gtt. x to xx; water, ℥iv; a teaspoonful every one or two hours.

"In some cases where there is a necessity for a speedy action, as in cases of angina pectoris or neuralgia of the heart, I give one or two full doses of twenty drops.

"Lobelia is specific in difficult labor from rigid os, vagina or perineum. It also stimulates the contractile function of the uterus, and thus strengthens the pains. This use of lobelia will be greatly prized when known. In tardy or difficult labor add ℥i of the tincture to ℥iv of water, and give a teaspoonful every fifteen minutes until slight nausea is produced, then in smaller quantities. In rigid os or perineum I frequently employ it in the same way, and with excellent results, but in other cases give it in larger doses until nausea is induced.

"Lobelia is a *sedative,* occupying a place between veratrum and aconite." (Scudder.)

Lobelia has recently been used hypodermically in diphtheria with most wonderful results. In relating his experience with lobelia in this dangerous disease, Dr. E. Jentzsch in part says:

"To save time, and trusting that you will credit me with sufficient competency in my vocation, I will say that my boy was stricken with a fulminating case of naso-pharyngeal diphtheria. The serum antitoxin was exhibited promptly in sufficiently large doses and repeated, with no other result except that the child passed from an active sthenic condition, with dyspnea, into a

passive collapse, with apnea. This I had witnessed before, and knew it to be fatal with certainty. I was therefore in despair. . . . . I recalled the writings of the great Scudder, where he extols lobelia as a life-saver.

"Thereupon I filled my hypodermic syringe with the pure specific tincture of lobelia, and gave the child the entire dose subcutaneously. Strange to say, I gave it with a confidence altogether out of proportion to the circumstances. However, the result proved this to be justified, for the patient responded immediately in a marvelous manner.

"All the fatal symptoms gave way to those of returning health, the patient passing from a death-struggle into a peaceful slumber, from which he awoke after three hours, somewhat weak. Another dose was given, which was followed by a still more pronounced reaction for the better. The patient from that time continued to convalesce, and, with the exception of a post-diphtheria pharyngeal paralysis, made a rapid recovery, the paralysis yielding to another dose of the same remedy.

"This happened nearly four years ago, and since then I have repeated in many cases the phenomenal experience with this remedy. At first I used the serum and the lobelia in conjunction. But I gradually realized that the latter was entirely reliable, doing even better without the serum, so that now I can tell you with absolute certainty that lobelia is in every respect far superior to the serum, for the reasons that it is more reliable, because it acts quicker and with a much greater centainty than the serum, and, secondly, it prevents, arrests and cures the disease promptly, irrespective of what day the treatment is instituted.

"It makes no difference whether it is the first or the sixth day of the existence of the disease, with the exception that in the longer-standing cases the treatment must be repeated more often—every two or three hours—until the desired result is obtained.

"In conclusion, let me give you a concise description of my method of treating diphtheria. In any case where there is the least suspicion of diphtheria I give a half-drachm dose of the specific tincture of lobelia hypodermically, and repeat in from two to twelve hours, once or oftener, as indicated, until reaction sets in, which means a return to health.

"Systemic remedies I give according to specific indications.

"By experience I have found the hypodermic injection best borne by the patient when injected anywhere on the trunk, abdominal parietes, the back and thighs."

"Spasmodic stricture lobelia will cure as if by magic, and in permanent stricture, where you have found it impossible to pass the smallest kind of a sound, you will find after its appli-

cation the sound will easily pass. I can best illustrate by reporting to you the first case upon which I used it.

"Before attempting to pass the sound I dropped into the urethra about fifteen drops of fluid extract of lobelia, closing the meatus, and held the lobelia in the urethra for five minutes. It produced a smarting sensation, which passed away in a short time. I now prepared my sounds, and was delighted to find that I could pass a No. 10 with little difficulty. I continued this treatment twice a week without producing any urethritis, gradually increasing the size of the sounds until I could with ease pass a 24. The patient can now pass his urine normally, has no gleety discharge, and I have not passed the sound for two years. I see him frequently, and know that he has had no return of the difficulty." (Boskowitz.)

Lobelia inflata is antispasmodic, sedative, diaphoretic, and, in medium doses, nauseant, expectorant, relaxant and emetic. In very large doses it causes great relaxation of the muscular system and a sense of impending death.

Indications.—Pneumonia, when there is short, labored breathing; sense of fullness and oppression in the region of the heart; oppression of the chest, with difficult respiration; short, lancinating pain, apparently starting in the heart and radiating to the left shoulder and arm; angina pectoris; rigid os uteri; obstinate convulsions, especially when of hysterical origin; full, oppressed or small, feeble pulse; precordial oppression.

Dose.—Fluid extract, 1 to 30 drops (the latter is emetic); specific medicine, 1 to 30 drops (the latter is emetic).

Usual Prescription.—℞ Lobelia, gtt. x to xv; water, ℥iv; M. Sig. Dose one teaspoonful every hour or two.

In order to get the best results from this drug as an emetic, some physicians of large experience prefer to give it in small doses—the fraction of a drop—in tepid water every ten minutes, until nausea is produced as a result of the system becoming saturated with the lobelia, when a single dose of five or ten drops, given in warm water, will produce an emesis that not only empties the stomach but removes much of the effete material from the blood.

Lycopodium Clavatum—Club Moss.

Lycopodium has been employed in some forms of dyspepsia with satisfactory results, and in catarrhal gastritis, when char-

acterized by soreness on pressure over the stomach, and a sensation of fullness of the stomach when but a small quantity of food has been taken, it has often proved a remedy of corrective power. It is used with some success in rheumatic conditions, and as a remedy in the uric acid diathesis it has been highly recommended.

There are cases of infantile fever that do not readily yield to ferrum phosphoricum or aconite, and though they seem to be periodic, they are not benefited by quinine. In such cases lycopodium has been used with excellent results.

A powder made of the fine sporules of lycopodium is extensively used pure, or with about one-fourth part of oxide of zinc, as a dusting-powder for chappings, moist eczemas, herpes zoster, intertrigo, and many other eruptions, especially for children. It is also used as a covering for pills.

Lycopodium clavatum is alterative, laxative and stimulant to the nervous system.

Indications.—Extreme sensitiveness of the surface; slow, painful boils, nodes or swellings; derangements of digestion, with loss of appetite, flatulence, acidity and constipation; chronic catarrh; urinary incontinence, vesical catarrh, or painful urination; uric acid gravel or "red sand" in the urine; high-colored urine which stains the clothing red; obscure periodicity; enlarged tonsils which are studded with small ulcers; sour belching and sometimes sour vomiting; rattling cough and dyspnea.

Dose.—Specific medicine, 1 to 20 drops.

Usual Prescription.—℞ Lycopodium, gtt. v to x; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Lycopus Virginicus—Bugleweed.

Lycopus is among the most certain remedies which influence the heart, arteries and capillaries. It lessens irritability, lessens the frequency of the pulse, and improves capillary circulation. In hemorrhage from the lungs and other organs it exercises an influence which is positively restraining. Its effect is most decided in active hemorrhage, especially when the action of the heart is vigorous and the pulse full and strong. In bronchial irritation lycopus constitutes a useful medicament, and is especially valuable as a means of relieving the troublesome cough which often accompanies such irritation.

Lycopus is a frequently needed remedy in functional diseases of the heart, hemoptysis, incipient phthisis, diabetes and menstrual derangements, with a tendency to puffiness or swelling of the limbs on exertion, when the pulse is feeble and frequent.

"Lycopus will be found a very valuable remedy, and will take place with veratrum and aconite. It is a very certain sedative where increased frequency of pulse is dependent upon want of power. For this purpose we employ it in all forms of chronic disease with frequent pulse, and in the advanced stages of acute disease where there is great debility. No remedy is more certain in its action in these cases; and we will find that as the pulse is reduced in frequency it is increased in strength, and there is a more regular and uniform circulation of the blood.

"The remedy evidently acts upon the sympathetic system of nerves, and we not only have an improvement in the circulation, but every vegetative function feels its influence. Thus it improves the appetite and blood-making, nutrition and secretion.

"It has been employed more extensively in the treatment of hemoptysis than in any other disease. In these cases its action is slow, but very certain, and its influence seems to come from its sedative action; in this it resembles digitalis. Employed in phthisis, we find it relieving the cough, checking night-sweats and diarrhea, lessening the frequency of the pulse, improving the appetite and giving better digestion. We observe the same influence from the protracted use of veratrum in these cases, evidencing the relationship between the remedies." (Scudder.)

"Drs. Pendleton and Rogers, of New York, were among the first to investigate the properties of bugleweed, and they reported several cases of hemoptysis and incipient consumption as having been cured by it. In New Jersey it was used in Rafinesque's day as a remedy for diarrhea and dysentery.

"Lycopus was introduced into Homeopathic practice by Professor E. M. Hale, who first used it on the recommendation of an Eclectic physician in a case of incipient phthisis. It is now employed to a considerable extent by the Homeopathic branch of the profession, but its development is due almost entirely to the Eclectics, and until recent years it has scarcely been mentioned by the old school physicians.

"Scudder says that lycopus will be found to be a very valuable remedy, and will take its place with veratrum and aconite. It is a certain sedative where increased frequency is dependent upon want of power. For this purpose he employs it in all forms of acute disease where there is great debility. No remedy is more certain in its action in these cases; and he finds that as the pulse is decreased in frequency it is increased in strength, and there is a more regular and uniform circulation of the blood.

The remedy, he continues, evidently acts upon the sympathetic system of nerves, and we have not only an improvement in the circulation, but every vegetative function feels its influence. Thus it improves the appetite and blood-making, nutrition and secretion. It has been employed more extensively in the treatment of hemoptysis than in any other disease. In these cases its action is very slow but very certain, and its influence seems to come from its sedative action. In this it resembles digitalis. Employed in phthisis, we find it relieving cough, checking night-sweats and diarrhea, lessening the frequency of the pulse, improving the appetite and giving better digestion. We observe the same influence from the protracted use of veratrum in these cases, evidencing the relationship between the remedies.

"Shoemaker states that lycopus is astringent and sedative. It has been used in pulmonary disorders and phthisis to allay fever, cough and expectoration. It reduces the force and frequency of the heart's action, and acts as a sedative, and in large doses is depressant to the nervous system. By virtue of its volatile oil it is somewhat carminative, and in small doses is considered tonic. It has been used in organic and functional heart disease, and in exophthalmos by Dr. Hector. It is of service in spasmodic cough in combination with belladonna, but is rarely used. Probably when its composition and physiological properties are better understood it may be more appreciated.

"Lycopus is a neurotic, producing its effects principally through the sympathetic system of nerves. Its principal sphere of action is the thoracic and abdominal viscera.

The nature of its action is that of a sedative, mild narcotic, subastringent and tonic. It acts on the heart as a sedative, constricting the blood-vessels and lessening the flow of blood. Its effects are most marked and satisfactory in those cases where the vascular action is tumultuous, the pulse rapid and the heart weak." (French.)

Lycopus virginicus is tonic, sedative, astringent and narcotic.

Indications.—Chronic cough, with frequent pulse and high range of temperature; hemorrhage, with frequent pulse; chronic diseases, with frequent, feeble pulse; irregular, rapid and labored action of the heart, the skin being blanched and the extremities cold; passive capillary congestion, involving either the lungs, with a tendency to spitting blood, the kidneys, with profuse urination and the urine containing sugar, the liver, with various bilious symptoms, or the mucous surfaces, with catarrhal conditions; albuminuria, with frequent pulse.

Dose.—Fluid extract, 1 to 20 drops; specific medicine, 1 to 20 drops

Usual Prescription.—℞ Lycopus, gtt. x to xx; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Magnesii Calcinata—Calcined Magnesium.

Calcined magnesia constitutes an excellent antacid and laxative for children. Its long-continued use is said to cure warts. Administered as a thin milk (the "milk of magnesia") in twenty to thirty parts of water, and in about twenty times the amount of the poison swallowed, it is an antidote in poisoning by arsenious, sulphuric, nitric, hydrochloric, acetic and oxalic acids, or by corrosive sublimate or the salts of copper. Eminent authors claim that it is *not* an antidote to phosphorus.

Calcined magnesium is antacid, laxative and antilithic.

Indications.—Excessive gastric acidity; uric acid in the urine, with undue gastric acidity.

Dose.—As a purgative, 3 grains to 1 drachm, suspended in water, before meals; for other purposes, 1 to 15 grains, suspended in water or milk, after meals.

Magnesii Carbonas—Magnesium Carbonate.

The carbonate of magnesium is often employed with good results in abnormal conditions characterized by excessive acidity of the stomach and intestinal canal. When a laxative action is desired it should be administered in lemonade or lemon juice, as such action is only obtained when it meets with an acid in the alimentary canal. This agent makes an excellent dusting-powder in dermatitis and irritable conditions of the skin.

Magnesium carbonate is antacid, absorbent and laxative.

Indications.—Excessive acidity of the stomach and intestinal canal associated with constipation; acid diarrhea.

Dose.—½ to 1 drachm.

Usual Dose.—3 to 10 grains in powder or suspended in water.

Magnesii Phosphoricum—Magnesium Phosphate.

This remedy has been extensively employed with curative results in diseases having their seat in the nerve fiber cells or in the terminal bulbs of the nerves, in the muscles, or in the muscular tissue itself.

"It is stated that this remedy is found in the muscles, nerves, bone, teeth, brain and blood corpuscles. It is more abundant in the white nerve-fibers, and when a deficiency of this salt occurs

these fibers contract and produce one form of cramps or spasms. This occurs sometimes in tissues of the stomach and causes the walls of the stomach to contract, and producing pain. If it were not for the gas that forms at these times and helps to prevent a collapse, the pain would be intense. Belching of gas that does not relieve is a prominent indication for this remedy. Magnesia phos. is indicated and in some cases acts better combined with calcarea phos." (Kinnet.)

The antispasmodic power of the phosphate of magnesia being unmistakable, it was naturally suggested as a suitable medicament in cramps of various kinds, spasms of the glottis, tetanus, epilepsy, spasmodic retention of urine, and all abnormal conditions of a like character. Dr. W. A. Dewey, who has had large experience with the tissue salts, says that it is best adapted to the treatment of persons of a high nervous organization.

In neuralgic constrictive pains in the chest this agent exerts a corrective influence, and in arthritis, when there are excruciating pains of a spasmodic character, it is employed with advantage. In backache, when the pains are intermittent, shifting and neuralgic, it exerts a modifying influence, and in excruciating headaches, with a tendency to spasmodic symptoms, it is deemed a remedy of merit. It is also of value in neuralgic and rheumatic headaches, when the pains are stinging, intermittent and paroxysmal in character, and in neuralgic pains which come on periodically its relieving effect is most satisfactory.

The phosphate of magnesia has been employed for many years in acute sciatica and with the most gratifying results.

"A patient sought my services a little while ago for the relief of acute sciatica. In a few days he was much relieved and thought the worst passed. I cautioned him to avoid taking cold, and bade him continue the treatment. In about three days more he again called, and said, 'Doctor, I thought I was cured, but the last two nights and to-day I have suffered terribly.' The pain was not continuous, and yet it was not a periodic pain. It was a sharp, shooting pain, with a sense of constriction, occupying the hip joint, the region of the sciatic nerve and the right hypochondrium. It was not regular in its action nor constant, but would come without warning and leave without saying goodbye; in short, it was spasmodic in character.

"Remembering from experience that magnesium phosphate is antidotal to this spasmodic character of pain, I gave him the 3x in small doses every two hours. The condition was removed —the pain completely relieved.

"In another case a lady about six months advanced in pregnancy suffered with spasmodic pain radiating from the umbilicus to the pubes, not constant, but coming and going, and quite severe. Remembering that such a condition can be removed with magnesium phosphate I gave it here; results very satisfactory, as in other cases." (Fearn.)

Magnesium phosphate has also been employed in severe cases of singultus with unmistakably curative results, and in indigestion with cramp in the stomach it has often been found an efficient remedy.

"In gastralgia the phosphate of magnesia has a magic effect, often stopping a cramping condition of the stomach when all other remedies have failed." (Duffield.)

In watery diarrhea, with vomiting and cramps in the calves of the legs, the action of this agent is decidedly corrective, and in intermittent colicky pain it is a remedy of great value.

"I use magnesia phosphate in almost every case of colic of new-born infants with absolute, invariable, prompt and complete success." (Morgan.)

In dysentery frequent indications for the phosphate of magnesia are prominently presented, and in such cases its curative action is promptly manifested.

"In a case of dysentery the tenesmus was like a prolonged spasm of the muscles employed in defecation, and I administered magnesia phosphate in hot water. The pain was almost entirely relieved by the first dose. I have never had a more prompt and pleasing result. Magnesia phosphate is a grand antispasmodic, and fully as reliable as our more frequently used remedies." (Leonard.)

In menstrual colic, painful menstruation, or in pain preceding the flow, the phosphate of magnesia is one of our most efficient remedies.

In muscular paralysis caused by a disturbed or diseased condition of the different nerve fibers which convey the motor stimulus to the muscles it has been used with good effect, and in involuntary shaking and trembling of the hands, limbs or head, it is said to have exercised a restraining influence.

In spasmodic nervous asthma, accompanied by a paroxysmal, dry, tickling cough, it often affords marked relief, and in true spasmodic cough, coming on in paroxysms and without expector-

ation, it constitutes an excellent cough medicine. In the dry cough of nervous children it is also a useful remedial agent.

This is a useful remedy in whooping-cough. It modifies the cough, lessens the severity and frequency of the paroxysms, and materially shortens the duration of the disease. In this condition it should be given in hot water. One teaspoonful of the "Usual Prescription" may be administered in a little hot water every three or four hours regularly, and repeated whenever a paroxysm of coughing comes on. In colic it should also be given in hot water.

Magnesium phosphate is an excellent antispasmodic.

Indications.—Spasmodic cough, coming on in paroxysms, and convulsive fits of nervous cough, ending in a whoop; persistent semi-chronic cough of a psuedo-catarrhal and nervous character; spasmodic dry, tickling cough; darting spasmodic pains, accompanied by a feeling of constriction; spasmodic retention of urine; paralysis agitans; brain troubles of children, characterized by unconsciousness and convulsive symptoms; pain on top and back of the head, extending down the spine; pain commencing at the occiput and extending over the whole head, with nausea and chilliness; convulsive twitchings of the angles of the mouth; spasms of teething children; burning, tasteless eructations; cramps in the stomach, with sensation of a band tightly bound around the body; flatulent colic of children.

Dose.—Third trituration, 5 to 15 grains.

Usual Prescription.—℞ Magnesium phosphor., 3x, gr. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every fifteen minutes to every four hours.

Magnesii Sulphas—Magnesium Sulphate—Epsom Salt.

Magnesium sulphate in doses of one-fourth of an ounce to one ounce is a popular cathartic, but small doses of the salt, largely diluted with water, are quite as effective as the large doses usually employed. A saturated solution, given in teaspoonful doses three or four times a day, constitutes an important part of the successful treatment of urticaria, commonly known as hives. If in addition to this medicament a local application of a weak solution of common table salt (or still better, water from the ocean) is used, further treatment will seldom

be needed. The saturated solution will also cure many facial and other skin eruptions.

Magnesium sulphate is cathartic, diuretic and refrigerant.

Indications.—Constipation, accompanied by dull headache, seemingly dependent on reabsorption of excrementitious matter; febrile conditions which are aggravated by reabsorption of excrementitious material; facial and other eruptions.

Dose.—As a purgative, ¼ of an ounce to 1 ounce, dissolved in four to eight ounces of water; for constipation, 1 drachm, dissolved in a glass of water or plain soda-water, before breakfast.

Mangani Dioxidum Precipitatum—Precipitated Manganese Dioxide.

Manganese dioxide is used with beneficial results in amenorrhea and dysmenorrhea, and is said to be especially adapted to anemic patients. In gastralgia and pyrosis it is a useful remedy, and in simple ulcer of the stomach it constitutes a medicament of considerable value.

Manganese dioxide is emmenagogue and alterative. In very large doses it acts as a cumulative poison, and causes paralysis of the motor nerves.

Indications.—Chronic suppurative affections of the skin, when slow to heal; chlorotic conditions, when gastric disturbances are prominent; scrofula; anemia; amenorrhea; affections of the bones and periosteum.

Dose.—3 to 40 grains, in pills, every three or four hours.

Usual Dose.—5 to 10 grains, in pills or trituration, every three or four hours.

Mangani Sulphas—Manganese Sulphate.

Manganese sulphate has been used with some benefit in gouty dyspepsia, and in chlorosis and many variations of secondary anemia it is deemed a remedy of merit. It has been recommended in doses of two drachms, but such excessive doses should never be employed. Five to ten grains produce catharsis and increased secretion of bile, but even these doses are too large, on account of the danger of causing gastro-intestinal irritation and inflammation. In doses of one-half to three grains the best action of the remedy is secured.

Manganese sulphate is tonic, stimulant and cholagogue. In very large doses and in long-continued medium doses it weakens the tone of the stomach.

Indications.—Dropsy following the long-continued use of alcoholic liquors; dropsy, with a sense of oppression in the epigastrium, oppressed breathing and inability to lie down; enlargement of the liver and spleen, tumid and pendulous abdomen, and torpor of the digestive and blood-making organs.

Dose.—½ to 5 grains.

Usual Dose.—½ to 3 grains, three or four times a day.

Mangifera Indica—Mango.

Mangifera increases the tonicity of relaxed and enfeebled muscular tissue, and is said to have a very decided action on the uterus. It can be used both internally and locally. It exerts a restraining influence in profuse discharges of all kinds when they are the result of weakness and relaxation. In passive hemorrhage from the uterus its action is speedy and corrective, and in subinvolution of the uterus it has been highly recommended as an agent of reducing power. In hemorrhage from the lungs it constitutes a medicament which is often life-saving.

Mangifera is also useful in wrongs of the stomach and bowels, and as a remedy in catarrh, leucorrhea, gleet, diarrhea, dysentery, vaginitis and urethritis, it has been used with curative results. In diphtheria it is said to have proved useful. Locally it is used as a spray, as an injection and as a gargle. Two drachms of the specific medicine (or a good fluid extract) added to four ounces of water constitutes a good gargle. In diseases of the throat it may be applied full strength, with a camel's hair brush.

"I have found mangifera of marked service in the treatment of profuse and exhaustive menstrual fluxes. In uterine hemorrhage following miscarriage, the agent exerts a powerfully restraining influence upon the hemorrhagic waste. In the sanguineous losses, which often occur about the change of life, and when uterine tumors are developing, the mangifera is the most potent and reliable medicine ever introduced to the notice of the medical profession. I prescribe the fluid extract, in five-drop doses, every three or four hours. In a short time, the influence of the medicine is observed, and in a few days the desired effect is realized. No remedial agent of so great value, for the purpose

named, has been introduced to the profession; it is as near a specific for profuse menstruation and uterine hemorrhage as may be desired. I might report ten or twelve cases in which the medicine exerted just such an action as was wished." (Howe.)

"The first and chief property of mangifera is that of an astringent, but its astringency is of a peculiar kind. Like some other members of this class of remedies, it contains a form of tannic acid, but not an aggressive form, for it does not, like so many of the tannates, lead to constipation. Mangifera seems to combine with its astringent properties the action of a *sedative to mucous surfaces,* both soothing and astringent, but at the same time it is distinctly *tonic,* increasing vascular tonicity, aiding the appetite, and checking discharges, whether of mucus or blood, and particularly never disturbing the stomach.

"My first serious test of mangifera was in a severe case of hemorrhage following abortion. There was no gushing of blood, but a steady and continual drain, so that it was becoming serious. Ten drops of the specific medicine mangifera were given in water every two hours. The effect was remarkable, the hemorrhage was stopped, and the patient made a good recovery. The remedy might have been given more frequently, had not its effect been shown at once, as in emergency cases the dose may be repeated every fifteen minutes.

"In hemorrhage of the lungs, I have given mangifera so often that I have learned to rely upon it in passive cases, and it has done more for me than any other remedy.

"In hemorrhage, if passive, mangifera increases vascular tonicity, and thus prevents leakage and passive hemorrhage. In stomach and bowel troubles, in catarrh of the head and throat, the conditions are atonic, at least this is my experience, yet, although the tonic properties of the drug point to it as being a remedy pre-eminent in atonic conditions, it is not interdicted in inflammations." (Fearn.)

Mangifera indica is astringent to mucous membranes, but it does not constipate the bowels.

Indications.—Passive hemorrhages from the uterus, bowels or lungs; muco-purulent discharges from the bowels or uterus; profuse menstruation; patient in an atonic condition, muscular system relaxed, circulation poor, appetite poor, anemic and much depressed.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 20 drops.

Usual Prescription.—℞ Mangifera, gtt. xxx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour or two.

Marrubium Vulgare—Horehound.

Horehound exerts a marked influence upon the respiratory organs. It stimulates all mucous surface, but more especially those of the larynx and bronchi. It is employed with good effect in all conditions requiring such action. It is also valuable as an agent favoring normal respiration.

Horehound is used with satisfactory results in amenorrhea, and as a stimulant and tonic to the nervous system it has often been found useful. It exercises a tonic influence upon the stomach, and is deemed a remedy of curative power in atonic dyspepsia.

Marrubium vulgare is tonic, stimulant to mucous surfaces, expectorant and diuretic.

Indications.—Chronic catarrh; colds, coughs and pulmonary affections; debilitated conditions of the nervous system; atonic dyspepsia; amenorrhea.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Dose.—5 to 10 drops.

Melilotus Officinalis—Yellow Melilot Clover.

Melilotus is a stimulant to the local circulation of considerable power, and is, therefore, especially adapted to the treatment of many wrongs peculiar to delicate women and feeble children. Its greatest value is manifested in abnormal conditions associated with congestion. In congestion of the uterus and ovaries it exerts a corrective influence, and in congestion of the rectum and bladder it has been found useful. In atonic neuralgias and spasms during dentition it is frequently indicated, and in headache with throbbing caused by determination of blood it is a valuable remedy.

Melilotus officinalis is tonic and stimulant.

Indications.—Hacking, tickling cough; smothering sensations, when the respiratory tract is involved; neuralgia, when associated with debility; sense of fullness of the throat or chest; capillary congestions of all kinds; violent congestive headache; sick headache; congestive conditions of the uterus, ovaries, rectum or bladder.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1-10 to 10 drops.

Usual Prescription.—℞ Melilotus, gtt. v to x; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Menthol.

This secondary alcohol, obtained from the oil of mentha piperita and other peppermint oils, and occurring in prismatic crystals, is extensively employed as a local medicament. It has also been used internally, but such use is not here advised. It is employed with much advantage in headache by being rubbed on the forehead. It is used in the form of an ointment in various strengths for painful hemorrhoids, burns, boils, superficial inflammations, and other affections of a similar character. As an antipruritic it is a valuable remedy to relieve the itching of eczema, pruritus and urticaria. It is usually dissolved in oil for this purpose—in severe cases fifty grains to an ounce.

"Menthol possesses the general properties of peppermint oil somewhat intensified. It undoubtedly has active germicidal and pronounced tonic properties. It exerts considerable anesthetic power over parts to which it is applied, and is frequently added to ether, chloroform, etc., when they are to be used in spray for the relief of local pains. Paralysis of the spinal nerve centers and nerves, involving a loss of both sensation and motion, has resulted from large doses of menthol. When applied in solid form to the skin or mucous tissues, it first produces a sharp, burning sensation, soon followed by a sense of coldness with decreased sensibility of the parts. It forms a good application to itching surfaces, and in pruritus vulvæ a weak solution in olive oil has given us excellent satisfaction. It is largely used for itching of the surface, cellular inflammations, and local pains —such as occur in burns, scalds, insect bites and stings, eczema, ringworm, urticaria, toothache, earache, neuralgia, sciatica, boils, carbuncles, etc. In boils of the external auditory canal, a 20 per cent. solution in oil may be applied on cotton, renewing every twenty-four hours. A petrolatum ointment of menthol (20 per cent.) has been recommended as a stimulating agent where there is a lack of secretion of cerumen. Coryza and hay fever are frequently treated with the vapor or the direct application of a 10 to 20 per cent. solution to the nostrils, and a solution of the latter strength has been recommended where thickening of the membranes gives rise to obstruction or stenosis of the Eustachian tubes. Ozena, catarrhal sore throat and chronic inflammation of the pharynx are treated with the solution, while it has been used by atomization with success in pertussis, asthma, and bronchitis of a chronic type. Its vapor relieves irritable bronchial

cough. Extraordinary claims regarding its effects in nebulized spray have been advanced concerning its retarding influence and even arresting power over both pulmonary and laryngeal phthisis. These claims, however, require substantiation. Small doses sometimes allay vomiting, as of pregnancy, etc." (Felter.)

Menthol is antiseptic, analgesic, anesthetic, germicide and antipruritic.

Indications.—All conditions in which a remedy for the relief of local itching or pain is required.

Dose.—Internal use, ⅛ to 2 grains in pill, capsule, trituration or olive oil. Locally, ointment, liniment, or solution in oil, in strength ranging from 5 to 20 per cent.

Methylthioninæ Hydrochloridum—Methylthionine Hydrochloride—Methylene Blue.

Methylene blue is said to be especially active against the plasmodium malaria, and in small doses to aid the action of quinine. It influences nutrition, and acts not only upon the blood, but also upon nervous tissues and cells of the organism. In neuralgias it has been used with favorable results, especially when the neuralgia was of malarial origin. Cases of malarial hematuria treated with one-grain doses three times a day have been reported, which showed marked improvement from the first dose, and were cured within a week. It is also claimed by physicians of experience that its administration retards the progress of cancer, and that if given after operation it greatly lessens the chances of relapse. In cancer it has been given in doses of two grains daily, gradually increasing the quantity of the drug to six grains daily. In malarial and typhoid fevers it is especially indicated when the urine is red, or reddish, and the patient complains of a burning sensation when urinating. In sciatica it has been employed hypodermically in doses of one-fourth to one-half grain, and the results were of a modifying character. It is also said to be useful in rheumatism.

Methylene blue is used in gonorrhea with curative results, and in cystitis it constitutes an efficient medicament. It is also deemed a remedy of considerable value in nephritis, and in diabetes and pyelitis it has been found useful.

"After several large doses have been administered at appropriate intervals, the heart manifests evidence of disturbance.

There are achings, heaviness and oppression in the cardiac region, and disturbed respiration upon slight exertion. This passes off soon, if the remedy be discontinued. What its prolonged use might develop, I am unable to state. But it is evident that this agent, like other coal-tar products, is not safe to tamper with in a reckless and careless manner; and if it is to be prescribed for those who are liable to have their prescriptions renewed indefinitely, as is the habit with many gonorrhea patients, a judicious warning should accompany the prescription, until the drug has been more thoroughly tested.

"As a remedy, methylene blue claims our attention upon two propositions, viz., as a remedy for gonorrhea, and for malaria. In gonorrhea it promises to afford very desirable results, if reports are to be relied on. I must confess that in my hands it has not sustained its reputation, though I believe it will prove of *some* value in the treatment of gonorrhea. Contrary to my expectations, I have found it to act rather slowly. In fact, I am not sure but that we possess fully as reliable remedies in some of the older resources, even though they be not satisfactory. However, there is no disputing the fact that some cases of stubborn gonorrhea improve upon this remedy, even though it is not a panacea. Thus far I have used it in gonorrhea in one-grain doses, though hereafter I shall try the effect of smaller amounts, as even this dose seems to disturb the urethra unpleasantly.

"In malarial cachexia it may prove the best remedy yet discovered. The power of some of the coal-tar products to readily penetrate to the protoplasm of cells is observed by the readiness with which fuchsan reaches that of bacteria through their firm envelopes when it is desired to stain them for purposes of inspection. Judging from the readiness with which methylene blue permeates the blood and appears in the urine and feces, and granting its power to penetrate the red corpuscles, it seems as though it ought to search out the plasmodium malaria in all its haunts. Careful observers of the blood (microscopically) assure us that the plasmodium of Laveran disappears soon after taking this agent, and it is fair to infer that it (the plasmodium) has been destroyed through this influence.

"Whittaker, if I mistake not, recommends this remedy in the treatment of malaria, in his new work on the practice of medicine. My attention has been called to it more strikingly, however, by a medical acquaintance, who treats many cases of chronic disease, and who has related to me his experience with a stubborn old 'chronic,' who had baffled the efforts of many physicians of different schools for years. The old gentleman came before him for examination for lodge benefits, and he could see no ordinary evidence of disease about the subject, though he was debilitated, somewhat jaundiced, and dyspeptic—these

symptoms having persisted for years. Urinary analysis threw no light upon the case, and more from custom than anything else he placed a drop of the patient's blood under the microscope for examination. He now found what he believed to be the cause of the patient's ill-health. The blood was swarming with the hematozoa of malaria. Being acquainted with an itinerant practitioner who has made a 'good thing' of it traveling through malarious sections, treating chronic ague successfully, and whose only remedy has been methylene blue, he resolved to give the agent a trial in this case, and succeeded beyond his most sanguine expectations, his patient improving rapidly and permanently. Soon after the use of the agent was begun, a microscopical examination of the blood was again instituted, when it was found that the hematozoa had disappeared.

"I have had but a limited experience with the remedy in malarial cachexia. In a single case in which I have prescribed it, the patient could only be induced to continue the remedy two days, taking three grains before each meal, six doses in all being taken. The blue color of the urine alarmed him, but this was not the worst of it. An old prostatic irritation was aggravated, and as he had suffered considerably from this in time past, he declined to be made a subject of further experimentation. However, his health has been perceptibly improved since that time, and, though I have not verified anything with the microscope, I am of the opinion that he derived considerable benefit from the short period of medication." (Webster.)

Methylene blue is an intercellular antiseptic. It is eliminated principally by the kidneys, and soon after its administration colors the urine blue. It must not be confounded with the commercial methylene used as a dye or stain.

Indications.—Malarial affections; typhoid and malarial fevers; malarial hematuria; neuralgias of malarial origin; acute and chronic gonorrhea; cystitis; nephritis; urine red and causes burning sensation.

Dose.—¼ of a grain to 4 grains.

Usual Dose.—½ of a grain to 1 grain.

Mitchella Repens—Partridge Berry Vine.

Mitchella has been extensively and beneficially employed in the various uterine derangements. In chronic congestion of the uterus it is regarded as superior to many more commonly used drugs. In dysmenorrhea, when there is no organic obstruction, it is a remedy of decided corrective power, and in menorrhagia it is employed with the most gratifying results. It also consti-

tutes a medicament of usefulness in some dropsical conditions, and in suppression of urine, as well as when there is a too frequent desire to urinate, it has often proved a remedy of merit

"The mitchella exerts a direct influence upon the reproductive apparatus of the female, giving tone and improving functional activity. It has been extensively used as a uterine tonic, to promote menstruation, to remove false pains and unpleasant sensations in the latter months of pregnancy, and has been thought to be a good preparative to labor, rendering the birth of the child easier and less liable to accidents." (Scudder.)

Mitchella repens is tonic, emmenagogue, diuretic, astringent and alterative.

Indications.—Atonic conditions of the female reproductive organs; tardy menstruation; uneasy sensations in the pelvis, with dragging, tenderness and pressure; frequent desire to urinate, with difficulty of evacuation; suppression of urine; atonic conditions of the female organs of reproduction.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Mitchella, gtt. v to xxx; water, ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Monarda Punctata—Horsemint.

Horsemint was a favorite remedy with Dr. Wooster Beach and some of the early Eclectics, but it is now seldom employed. The results obtained from its use by the early Eclectics, however, give ample reason for believing it worthy of careful study. Dr. Beach, in his "American Practice," spoke of it as follows:

"Horsemint is a powerful diuretic. It affords immediate relief in gravel and suppression of urine. It restored one man after every other means had failed, and when he had nearly lost his senses from pain. The oil is very useful."

Monarda is one of our most valuable remedies in cholera morbus, as well as in various abnormal conditions characterized by excessive vomiting.

"I made the discovery early in my practice that its antiemetic power is wonderful. I was called into the country one day to treat a girl who had 'bilious fever.' As emetics were not only fashionable those days, but considered indispensable in 'bilious fever,' I prepared to give her an emetic.

"The usual method was to give about a drachm of ipecac powder stirred in boiling water, and divided into three doses twenty minutes apart. With the third dose, or soon after, the tincture of lobelia was given to loosen up the tardy bile and other materials.

"To flush the stomach I gave her copious drinks of warm infusion of monarda punctata (horsemint), but no vomiting set in. I mixed more ipecac and gave it, and poured in drachm doses of lobelia and followed with the warm tea to fill the stomach, and kept on repeating after that fashion till my drugs were all gone, and the young lady laughed at me and said she felt not the least bit sick at the stomach. So I felt badly defeated and puzzled.

"The next day I returned with more of the same drugs, and used them in the same way, with simply warm water to flush the stomach, and vomiting was free and easy as usual. Now I was aware that I had found something of great value in monarda punctata. If a simple infusion like that could perfectly antidote the emetic properties of ipecac and lobelia, and at least three times the usual quantity required for an emetic, surely it could arrest vomiting from any cause. Such was the conclusion forced upon me, and a long experience has proven it correct.

"A hypersensitive condition of the pneumogastric is the cause of vomiting, where it occurs from taking the usual foods and drinks, and an infusion of monarda, or a few drops of the tincture, will soon give back the usual tone.

"In that stormy condition of the digestive tract called cholera morbus, a single teacupful of a strong hot infusion will quiet the storm as if the Master had said: 'Peace, be still.' Of course, the stomach and bowels are usually well emptied before the doctor arrives. I prepare a strong tincture of the leaves and flower heads, and put one or two drachms in a teacup of hot water for a single dose in cholera morbus or bilious colic. I often see elaborate shotgun prescriptions and in various combinations for cholera morbus, but I never use them, as this simple remedy has never failed in a case in all my practice." (Laws.)

Monarda punctata is powerfully antiemetic and diuretic.

Indications.—Cholera morbus; nausea and vomiting; suppression of urine; gravel.

Dose.—Tincture, 10 drops to 2 drachms.

Morphinæ Sulphas—Morphine Sulphate.

Morphine may be used for the relief of pain, regardless of the location or cause. Pain of moderate intensity should, when possible, be allayed by other means, but when it is excruciating it is not wise to experiment with other drugs. It should, how-

ever, if possible, be avoided in all pains of an essentially chronic nature, as in such cases the patient is almost certain to acquire the morphine habit. The body readily becomes accustomed to morphine, and a distinct tolerance soon becomes established. Chronic morphine takers use enormous quantities of the drug. Cases have been reported in which 100 grains were used in a day. In using morphine for the relief of pain, a small dose should be given first. This should be repeated, and increased if necessary, until the amount required to quiet the pain is ascertained. The dose should then only be repeated as there is a return of the pain. Morphine is an indispensable agent for temporary use, and should be employed for temporary purposes only, as it is a drug to which many persons soon become habituated. This fact should be ever borne in mind when prescribing it, and every precaution taken against the possibility of the patient becoming the worst of all wrecks—a morphine fiend. A physician has no moral right to give a patient a written prescription containing morphine or any form of opium. It is not wise to even tell a patient the name of the remedy being used. The indiscriminate sale of this and kindred drugs by the retail druggist cannot be too vigorously condemned.

"The indications for the hypodermic use of morphine are the same as those given for opium, and where there is present the contraindications, the use will not give the expected results, and may prove injurious. Fortunately, in the majority of cases of neuralgia there is a soft, open pulse, the cool, pallid skin, and the evidence of an enfeebled cerebro-spinal circulation. In such cases the hypodermic use of morphine gives present relief, and from its topical stimulation may effect a radical cure.

"We never employ the hypodermic injection of morphine where there is a hard, small pulse, dryness and constriction of skin, dry tongue, flushed face, bright eyes and contracted pupils. He who uses it in such cases will very certainly be disappointed in its action. In many cases of fever and inflammation, though the patient suffers pain, and the ordinary influence of morphine in this way would be very desirable, we withhold it." (Scudder.)

Morphine possesses essentially all the medicinal properties of opium. In large doses it is one of the most powerful toxicants known, and many deaths have resulted from its improper use. Permanganate of potassium is said to be an efficient antidote to its poisonous effects.

Indications.—All forms of pain and many forms of sleeplessness, when the pulse is soft and the tongue moist; puerperal convulsions; traumatic tetanus; spasmodic asthma; angina pectoris; neuralgia; irritative coughs.

Dose.—1/8 to 1/2 grain (the latter with caution).

Usual Dose.—1/8 to 1/4 grain.

The usual dose hypodermically is 1-16 to 1/8 of a grain. Tablets for hypodermic use are convenient and efficient.

Mutisia Viciæfolia—Scale Flower.

Scale flower has been highly recommended as a remedy in acute bronchitis, and cases of cramp have been reported in which it was employed with much advantage. In spasmodic and convulsive coughs it is an efficient remedial agent, and in hysterical conditions it constitutes a medicament of great usefulness.

Mutisia viciæfolia is sedative and antispasmodic.

Indications.—Convulsive coughs; spasmodic coughs; nocturnal cough of phthisis; irritability in respiratory diseases; cardiac weakness caused by over-exertion.

Dose.—Fluid extract, 15 to 60 drops.

Usual Dose.—15 to 20 drops.

Myrica Cerifera—Bayberry.

Bayberry is an energetic general stimulant, and also a specific stimulant to mucous membranes. In atonic conditions of mucous membranes, with increased secretion, its influence is decidedly corrective, and in catarrhal affections of long standing, characterized by tenacious discharges, which are often offensive and irritating, it constitutes a remedy of great usefulness.

Myrica was a favorite remedy of Dr. Wooster Beach, who "found it to be a sovereign remedy in scrofula in a state of ulcer." The doctor said: "I consider this shrub to be one of the most valuable productions in this or any other country." He and other early Eclectics used this agent in "atonic diarrhea and dysentery, with great feebleness of the circulation." It was also used with good success in atony of the cutaneous vessels. In leucorrhea and amenorrhea it has been employed as a constitutional remedy with much advantage.

Myrica cerifera is stimulant, alterative, diuretic, astringent and antispasmodic.

Indications.—Increased secretion from the mucous membranes, they being full and relaxed; imperfect circulation in the surfaces and in the extremities; catarrhal affections of long standing, characterized by a tenacious discharge, which is often offensive and irritating.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Dose.—2 to 20 drops.

Myrospermum Peruiferum—Balsam of Peru.

This balsam increases the tone of mucous tissues, and in this way lessens excessive secretion.

Balsam of Peru is stimulant and expectorant.

Indications.—Inflammation of the mucous membranes of the stomach and bowels; chronic diarrhea and dysentery; gonorrhea and leucorrhea; catarrh. Locally: Ringworm of the scalp; sore nipples; ulcers; burns; frost bites; chilblains.

Dose.—10 to 30 drops diffused in water by means of sugar and gum arabic. Locally it may be applied alone or in an ointment made by melting it with an equal part by weight of tallow.

Myrospermum Toluiferum—Balsam of Tolu.

A good liniment for excoriated nipples is made as follows: Mix two parts of tolu with three parts of almond oil, four parts of gum arabic and sixteen parts of rose water.

Balsam of tolu is stimulant, tonic and expectorant.

Indications.—Catarrhs and other pulmonary affections which are not inflammatory in character; excoriated nipples.

Dose.—10 to 30 grains taken diffused in water by means of gum arabic.

Myrrha—Myrrh.

Indications for myrrh are sometimes met with in gastric and intestinal diseases, bronchial and pulmonary catarrhs, catarrhs of the nasal passages and throat, and in discharges from the genito-urinary surfaces. It is also a useful remedy in menstrual derangements characterized by debility of the muscular fiber. Externally it is used in tooth-powders, mouth washes and gargles, and also as a mildly stimulating application to sluggish ulcers. The tincture is used more especially as a dentifrice and mouth wash. The addition of water precipitates the myrrh.

Myrrha is stimulant, antiseptic, expectorant and emmenagogue.

Indications.—Muscular atony; vascular enfeeblement; profuse secretion from mucous membranes when there are no symptoms of inflammation. Locally: Unhealthy ulcers of the skin and mucous membranes.

Dose.—Myrrha, 1 to 30 grains; fluid extract, 10 to 30 drops; tincture, 30 to 60 drops.

Usual Dose.—2 to 10 grains of the third trituration.

Natrium Muriaticum—Sodium Chloride.

It has been clearly demonstrated by competent investigators that the chloride of sodium promotes the activity of tissue change and increases the excretion of urea. It acts upon the blood, the lymphatic system, the mucous lining of the digestive tract and the spleen.

In chronic diseases affecting the glands, bowels and skin natrium muriate frequently constitutes a medicament essential to a successful treatment. In Addison's disease when nutrition is greatly impaired and there is tension and heat in the region of the kidneys, as well as when there is marked mental and physical prostration, this agent is often of value, and in anemia when the blood is thin and watery it is deemed a remedy of some therapeutic power. In arthritis it has been used with advantage, and in synovitis much benefit has been derived from its exhibition. Asthma, when there is a profuse frothy mucous discharge, also comes within its relieving power. When there is a rapid emaciation of the throat and neck, and especially when the complexion is sallow and the child has an old and anxious look, a place may be found for the chloride of sodium in the treatment of children. In "brain-fag," accompanied by sleeplessness and gloomy forebodings, it is often useful, and in chronic cases of chorea it is used with some success.

In chronic bronchitis and bronchial catarrh, with a discharge of watery and clear phlegm, it constitutes a remedial agent of considerable value, and in catarrhs and colds, when there is a watery, transparent and frothy discharge, its action is promptly corrective. In the opinion of Dr. George Herring "it is almost infallible for stopping a cold commencing with sneezing." In

many cases when there is an excessive watery secretion it constitutes a very good cough medicine.

In the delirium which often occurs in acute diseases accompanied by starting of the body, wandering and muttering, its action is markedly quieting, and in delirium tremens it exerts an influence which is often controlling in character.

"Delirium occurring in any case from whatever cause, with a slimy, frothy appearance of the tongue with watery secretions will be relieved by this remedy. This indication is the 'keynote' for this remedy. A case in point is the following: Mr. E. A. had delirium tremens with the above conditions (and most of them do) in which our ordinary remedies seemed to be of no avail. He was relieved in a short time by five-grain doses of natrium muriate, 3x. The next day the patient seemed in good condition and had slept well the night before. We see the provings of this theory in the action of one-half grain doses of pilocarpine in these conditions given hypodermically. This will sober up these old drunkards quickest of anything that I know of, but it is too severe and not curative. This remedy produces such profuse diaphoresis, equalizing the water in the system, which gives the immediate relief, but only acts for the time being. This proves the theory of the unequal balance of the water in the system. The next case of delirium tremens you have, study it carefully for these conditions, and if it is 'too utterly too too' that it cannot be managed without having several to hold the patient, or having him tied, try the pilocarpine treatment, which will sober him up in a way that will surprise you, and then follow it up with the natrium muriate to get the system in perfect condition—minus the whisky." (Kinnett.)

In dropsical swellings of any of the subcutaneous areolar tissues of the body the chloride of sodium may well constitute a part of the treatment, and in anasarca it is deemed a remedy of some merit. It is also a very efficient agent in indigestion, and is especially indicated when there is water gathering in the mouth, with vomiting of clear, frothy water or stringy saliva. In chronic inflammation of the salivary glands, associated with excessive flow of saliva, it is often useful, and in chronic swelling of the lymphatic glands it exercises a reducing influence.

Natrium muriate is often an indicated remedy in the treatment of children during dentition, and is especially called for when there is an excessive dribbling or flow of saliva. In diarrhea with watery, slimy or frothy stools, it is also of considerable usefulness.

"Natrium muriate is a very valuable remedy in chronic diarrhea of children. The emaciation of the neck, the greasy appearance of the face and the peculiar desires and aversions furnish the leading indications for this remedy in this particular disease." (Laird.)

In diabetes mellitus, when the thirst seems almost unquenchable, or when there is great debility and despondency, the chloride of sodium should be included in the treatment. It has been used with advantage in various wrongs of the kidneys, and at least one writer claims that it will cause a decrease in the amount of albumin, an increase in the amount of urea, and a very marked increase in the quantity of chlorides eliminated. He thinks it should constitute a part of the treatment of all cases of Bright's disease.

In inflammation of the mucous lining of the throat, especially when the parts are covered with transparent mucus, the chloride of sodium is a useful remedy, and when the uvula is relaxed or inflamed its action is corrective. It has some success in chronic enlargement of the tonsils.

In sunstroke natrium muriate should never be neglected, for it is one of the most efficient remedies that can be employed in that alarming state.

"I was called to see Mr. R. L., a young man suffering from sunstroke. He had been working in the harvest field. When I arrived, found him lying in the shade of a house, where he had been carried on a pallet, unconscious, twitching of the muscles, face flushed, labored breathing, and rapid pulse. I at once determined to rely on natrium muriate alone, and I gave him ten grains of the 3x trituration dry on the tongue every fifteen minutes. I remained an hour, when he could swallow liquids, and then gave him the same dose in solution every hour. He slept well that night. The next day he came to the village, and the next day went to work again. No other medicine was given him." (Kinnett.)

Natrium muriate has been employed with much success in chronic gonorrhea, and is especially efficient in cases characterized by the persistent "morning drop." In dysmenorrhea when the menses are scanty and dark, especially when preceded by frontal headache, the chloride of sodium exercises a modifying influence, and in hysteria when menstruation is delayed, and there is great debility, it is employed with gratifying results.

Indications.—Chronic nasal and pharyngeal catarrhs, with loss of smell and taste; coryza with clear, watery discharge, or alternating with dry coryza, with loss of smell and taste; tongue broad, pallid or puffy, with a pasty or slimy coating; follicular catarrh of the pharynx; sensitive, easily bleeding, ulcerated gums; sore throat, with transparent mucus covering the tonsils; glandular swellings; indigestion, with vomiting of clear, frothy water or stringy saliva; menses profuse, with slimy, corroding leucorrhea, and watery, irritating discharge after or between periods; pleurisy, when serous exudation has taken place; chronic rheumatism of the joints; paretic weakness in the various muscular groups of the trunk and limbs; restlessness and twitching of muscles; profuse night-sweats; blisters, blebs and watery vesicles on the skin; colorless watery vesicles, forming into thin scabs or crusts; dropsy or dropsical swellings and puffiness of the tissues; serous exudations and serous secretions; catarrhs of all mucous surfaces; increased watery condition of any part of the body; hydrocephalus.

Dose.—Trituration, 3x, 5 to 15 grains.

Usual Prescription.—℞ Natrium mur., 3x, gr. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every half hour to every two hours.

Natrium Phosphoricum—Sodium Phosphate.

The phosphate of sodium energetically influences the bones, glands, lungs and abdominal organs. Its field of therapeutic action is, therefore, somewhat extensive.

Natrium phosphoricum has been extensively employed in the various forms of rheumatism, and is especially valuable when the finger joints are involved. In inflammatory rheumatism, especially when the tongue is covered with a yellow coating, it constitutes a medicament of curative power, and in articular rheumatism in which there is marked evidence of a scrofulous basis, it is employed with gratifying results.

"I have used this remedy quite extensively in rheumatism, and it is the first remedy I think of. Whatever else I prescribe that I may find specifically indicated I give this one from first to last, and especially in the cases that have profuse or sour-smelling perspiration. Many physicians claim that the cause of excessive pain in the joints is due to an acid diathesis, and if this is so, it will account for the remedial effect of the drug in

these cases. It is stated by good authority that a lack of this salt is one of the causes if not the prime cause of diabetes mellitus. It is also among our best remedies in liver diseases." (Kinnett.)

In acute gout, as well as in the chronic form of this painful disease, much benefit is derived from the administration of the phosphate of sodium.

In spinal anemia it is highly recommended, and in paralytic weakness of the lower extremities, with general prostration, heaviness and a sensation of fatigue, especially after a short walk or ascending slight elevations, it has been found a very efficient remedial agent.

In the wrongs of the stomach, especially when characterized by loss of appetite and a yellow creamy coating on the tongue, natrium phosphoricum is used with satisfactory results, and in the treatment of patients who are nervous, irritable, anxious and apprehensive of some danger, it is a frequently indicated remedy. In leucorrhea, especially when the discharge is watery, it is deemed an agent of merit, and in the early stage of inflammation of the mammary glands it is often employed as a means of preventing suppuration. It is also often useful in morning sickness during pregnancy, with vomiting of frothy, watery phlegm.

Natrium phosphoricum has been employed in the treatment of the morphine habit, and it is claimed that in cases where this drug was continued for a long time complete cures were secured. In this condition it has usually been administered subcutaneously in glycerine and water.

Sodium phosphate is especially valuable in the treatment of children. In wrongs of life affecting infants suffering from an excess of lactic acid, and caused by overfeeding with milk and sugar, it is frequently a needed remedial agent, and in catarrh of the tonsils with a yellow tinged exudation, associated with an acid condition of the stomach, it is of value. It is also a useful medicament in sore throat when the tonsils are coated with yellow creamy mucus, and there is a sensation of rawness, and in cases in which there is a tendency to rickets in poorly nourished children, especially when the stools are constantly clay colored, it is beneficially employed. In incontinence of urine with acidity it is restraining in its action, and in atony of the bladder it exerts a corrective influence.

Natrium phosphoricum is always indicated when there is a moist, creamy or golden-yellow coating on the tongue, regardless of the name of the disease. In some cases this characteristic coating is found on the soft palate, tonsils and uvula, and in such cases it constitutes an equally urgent call for the exhibition of the medicament.

Indications.—Moist, creamy or golden-yellow coating at the back of the tongue; sour eructations and sour vomiting; greenish diarrhea; giddiness and vertigo, with gastric derangements; vomiting of a dark substance like coffee grounds; dyspepsia, with sour eructations and characteristic appearance of the tongue; flatulence, with sour rising; diarrhea caused by excess of acidity, with sour smelling stools, containing jelly-like masses of mucus; intestinal long and thread worms, with characteristic symptoms of acidity, or picking of the nose; yellow exudations and secretions.

Dose.—Trituration, 3x, 5 to 15 grains.

Usual Prescription.—℞ Natrium phos., 3x, gr. xx to ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every half hour to every two hours.

Natrium Sulphuricum—Sodium Sulphate.

Sodium sulphate (also known as Glauber's salt) constitutes an energetic medicament in all gastric bilious conditions, accumulation of water in the areolar tissues, yellow watery secretions of the skin, or yellow scales forming an eruption of vesicles. It is also an excellent remedy in affections caused by excessive secretion of bile. Its most marked indication is a dirty greenish-gray or greenish-brown coating on the root of the tongue.

Natrium sulphuricum is a very efficient remedy in diseases caused by living in damp houses, or by exposure in long-continued damp weather. It is also employed with much advantage in asthma accompanied by cough and raising of a glairy expectoration and associated with vomiting of a greenish substance after eating. In asthmatic breathing caused by a bronchial catarrh, which is always worse in damp weather, the sulphate of sodium is used with benefit, and in catarrh of the mucous membranes in general when characterized by a tendency to profuse secretion of greenish mucus, its action is unmistakably curative. In

coughs with thick, ropy and yellowish-green expectoration, it exercises a decidedly corrective influence, and in diarrhea, especially when the stools are watery and greenish in appearance, it is beneficially employed.

"Natrium sulphuricum is one of the most frequently needed remedies in cases of chronic diarrhea when the leading characteristic is the loose morning stool. The flatulent symptoms are usually prominent features but not necessarily present. Aggravation in damp weather is an important indication for this agent. It is also a valuable remedy in the greenish diarrhea of scarlatina, and in the chronic hereditary looseness of the bowels of old women, much benefit is derived from its use." (Bell.)

In gastric derangements, with acidity and indigestion, especially when caused by the use of too much fat food, it acts beneficially by aiding in the process of emulsifying fat, and in gastric wrongs characterized by excess of bile, bitter taste in the mouth, vomiting of bitter fluid, greenish-gray or greenish-brown coating on the tongue, as well by diarrhea with dark green stools, headache, giddiness, lassitude, "heart-burn" and copious formation of gas, it constitutes a frequently needed remedy. Sick-headache associated with diarrhea or vomiting of bile, comes within the curative range of the sulphate of sodium, and in colicky pain with giddiness and a greenish-gray coated tongue, it is a remedy of usefulness. Attacks of headache during menstruation which are frequently sudden in their onset, and characterized by determination of blood to the head, with heat on top of the head, a sensation of pressure in and through the head, despondency, vertigo and dullness, are often promptly relieved by this drug. In occipital headache, with severe pain at the base of the brain, it is also a good remedy.

In intermittent fever, especially when characterized by a greenish or bronze-colored coating on the tongue, and a yellow discoloration of the conjunctiva, sodium sulphate is employed with gratifying results, and in congestion of the liver, with soreness and sharp pain, it may well constitute a leading part of the treatment.

Natrium phosphoricum has been extensively employed in diabetes, and the results secured have often been superior to those obtained from many more frequently employed remedies. Its therapeutic action in this important condition should be more thoroughly investigated.

"While these two salts, natrium muriaticum and natrium sulphuricum, both act with water, they act in almost opposite directions. Both have the property of attracting water, but for an entirely different purpose. Natrium muriaticum attracts the water that is to be used *in* the system and distributes it equally to the different parts of the system, while natrium sulphuricum attracts the water due to retrograde metamorphosis, and eliminates it *from* the system. It takes away the water from the worn-out leucocytes and thereby accomplishes their disintegration.

"This explains why this is one of our very best remedies in ague and other malarial diseases. While it will not act so rapidly in eliminating the water from the system as jaborandi and other powerful diaphoretics and thus prevent a chill, it is a much better curative agent.

"In intermittent fever and malaria it is one of our best remedies. It is also a most excellent remedy in diabetes mellitus or insipidus. I have had better success with this remedy than any other I have used for these persistent conditions. In the case of a baby the skin was dry and harsh, tongue coated slightly yellow, temperature slightly elevated, and there was great thirst. The specific gravity of the urine was 1045 and it was heavily loaded with sugar. Natrium sulphuricum was given regularly in five-grain doses of the third trituration every four hours. Within a month the sugar was reduced one-half and the specific gravity to 1030. In another month the sugar was only one-fourth of what it was at first and the specific gravity was 1020. In four months there was not a trace of sugar and the urine showed a specific gravity of 1015. The quantity of urine was then normal." (Kinnett.)

In rheumatic arthritis, especially when the pains shift from one joint to another, the sulphate of sodium is of considerable value, and in diseases of the bones in which there is apparently pain in the bones, cracking of the joints and stiffness, it is used with some benefit. It is also deemed a remedy of merit in erysipelas, especially in the smooth form with tingling or painful swelling of the skin, and in infiltrated inflammation of the skin its influence is corrective. In chronic gonorrhea, especially when there is a persistent yellowish or greenish discharge of thick consistency, natrium sulphuricum constitutes a medicament of curative power, and in leucorrhea when the discharge is so acid and corrosive that it severely inflames the parts involved, its continued use will do much toward relieving the sufferings of the patient. It is also of value in urinary wrongs in which there

is a sandy deposit of brickdust-like substance in the urine, and it is often found useful in the treatment of children who cannot retain their urine throughout the night.

Indications.—Dirty, greenish-gray or greenish-brown coating on the root of the tongue; violent, pulsating headache, worse on top of the head; sick headache, with bilious diarrhea or vomiting of bile, and colicky pain; sallow or jaundiced appearance of the face; bitter taste and thick, tenacious slime in the mouth; pharyngeal catarrh, with profuse, thick, tenacious discharge; lithic deposits in the urine; brickdust-like coloring matter in the urine; excessive secretion of urine, especially if diabetic; pus and mucus in the urine; menses profuse, acrid and corrosive; cough, with thick, ropy, greenish pus-like expectoration; eruptions containing yellow, watery secretion; edematous inflammations of the skin; jaundiced skin.

Dose.—Trituration, 3x, 5 to 15 grains.

Usual Prescription.—℞ Natrium sulph., 3x, gr. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every half hour to every two hours.

Negundo Aceroides—Box Elder.

Competent observers have employed this agent in severe cases of hemorrhoids with more than ordinary success. The bark of the root and twigs of this tree should receive further study.

Indications.—Enlargements of the rectum; pile sacs; painful hemorrhoids.

Dose.—Tincture, 10 to 20 drops.

Usual Dose.—10 to 15 drops every two or three hours until improvement is obtained, and then three or four times a day.

Nepeta Cataria—Catnip.

Catnip is often an indicated remedy, and in the treatment of children it may frequently well take the place of many other drugs. Ten to thirty drops of the specific medicine (or a good fluid extract) added to five teaspoonfuls of hot sweetened water, and given freely, constitutes a good treatment for colicky and fretful infants.

Nepeta cataria is diaphoretic, tonic, antispasmodic, diuretic and carminative.

Indications.—Flatulent colic of children; nervous irritability,

especially in children; flexing the thighs upon the abdomen and persistent crying of children.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Nepeta cataria, ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every half hour to every hour.

Œnanthe Crocata—Water Dropwort.

This remedy has been employed in many cases of general epilepsy, and has cured some cases of the most severe form of the disease. It is a drug worthy of more careful study than it has heretofore received.

"Headache should always be taken into account as a guide in the administration of œnanthe crocata. Begin with the minimum dosage and carefully increase it until the headache appears, then drop down until you fall short of its production, when the dose should be so continued for a long time.

"In proper doses this remedy seems to steady the circulation of blood in the brain and spinal cord, and thereby give this structure its normal nourishment and promote its functions. My experience gives œnanthe a place as an emergency remedy wherever you would think of nitroglycerine. I used the remedy in one case where there was trouble with the optic nerve, with poor sight and continual sensation as if bits of straws and cobwebs were floating through the field of vision. Œnanthe gave prompt relief, and the trouble, which had been of considerable duration, has never given further annoyance. The remedy should be given further consideration in this direction. I believe that œnanthe crocata will prove of value in cases of malnutrition of the brain and spinal cord. Also where we wish to steady the supply of blood to those parts which, through some faulty condition of the nervous system (that we are so far unable to fathom), need attention.

"We notice just this condition of affairs in most cases of epilepsy, and œnanthe has done good work in many of these cases, although some of them are not in the least benefited. It is impossible at this time, with the limited observation and study that has been given the subject, to tell exactly what cases will receive benefit and what cases will not, but one may rest assured that remembering the headaches as a guide to the proper dosage, no harm whatever can come from its use.

"Œnanthe is also to be thought of in cases of locomotor ataxia. It has given a good account of itself in several cases in which I have used it." (Waterhouse.)

"One patient, for the six months previous to coming to me for treatment, had been having six to ten convulsions in twenty-four hours if not kept stupefied with bromide of potash. It would require from sixty to one hundred grains per day to control the condition. The mind was beginning to show feebleness, and the functions of the body were subnormal. The convulsions did not occur at or near the menstrual period any more than at other times.

"I prescribed specific medicine œnanthe crocata, minims five, water six ounces, mix. Directions; Give a teaspoonful every three hours until there was some complaint of headache, then only every four to six hours during the day, as would be necessary to control the convulsions. Result, not another spasm. The medicine was continued for three months and then omitted. At that time a little mental excitement brought on a convulsion. The medicine was resumed and continued for three months longer. No more convulsions, and the absent-minded condition had disappeared. The young lady became gay, cheerful, with active mind, and entered society and took part in social entertainments as did others of her associates.

"When the remedy would be withheld for a short time, a little mental excitement or mental fatigue would cause an epileptic seizure. The remedy was continued, gradually reducing the dose, for a period of about two years. Since that time more than a year has elapsed, there have been no indications of epilepsy, and no sequelæ. I have treated five other cases with like results." (Fisk.)

Œnanthe crocata is stimulant, tonic and antispasmodic. In large doses it is a dangerous poison, and causes burning heat in the throat and stomach, vertigo, convulsions, violent delirium or profound sleep, feeble pulse, loss of sensation and of power, rose-colored spots on the face and arms, coma and death. The plant has frequently caused death in human beings as well as in animals.

Indications.—Epilepsy, especially when there is anemia of the brain and spinal cord; epilepsy resulting from injury; vertigo caused by indigestion; debility of the sympathetic nervous system; giddiness and loss of equilibrium; all diseases resulting from malnutrition and anemia of the brain or spinal cord.

Dose.—Specific medicine, 1-20 to ½ drop.

Usual Prescription.—℞ Specific œnanthe crocata, gtt. v; water, ℥iv. M. Sig. Dose one teaspoonful every two to four hours.

Œnothera Biennis—Evening Primrose.

Evening primrose is an excellent remedy in many functional wrongs of the digestive organs, especially when there is extreme debility and much distress after meals. In typhoid fever it lessens irritation of the mucous membranes and aids in shortening the run of fever. Evening primrose is a valuable non-toxic remedy, and is promptly curative in many cases of dysentery and diarrhea. It is also a very efficient remedial agent when there are severe pains in the stomach and other manifestations of indigestion, and especially so when there is irritation of the nervous system.

"It has been found useful to allay irritation of the intestinal mucous membrane, and lessen the chances of serious mischief from the inflammatory action which precedes the ulceration of Peyer's patches, while it is argued that it may prevent ulceration if its use be begun in time." (Webster.)

Œnothera biennis is sedative to the nervous system, astringent, nervine and antispasmodic.

Indications.—Gastric symptoms accompanied by asthma; diarrhea and dysentery; severe pain in the stomach after eating; difficult breathing of irritable and nervous persons; chronic indigestion and gastric irritability; chronic diarrhea; dyspnea or palpitation accompanied by cough, especially in nervous persons; vesical irritation, with frequent desire to urinate in hysterical females; tenesmus with bloody mucous discharges, accompanying or following typhoid fever; sallow, dirty skin; tissues full and expressionless; tongue dirty, very unnatural and large; patient gloomy and despondent.

Dose.—Fluid extract, 2 to 60 drops.

Usual Dose.—8 to 10 drops.

Oleum Morrhuæ—Cod-Liver Oil.

Cod-liver oil is extensively employed in various forms of tuberculosis, and is deemed an efficacious remedy in such conditions. It is equally valuable in scrofulous affections, and in rachitis it is a frequently employed remedial agent. Chronic bronchitis is relieved by its use, and in diseases resulting in anemia it has long been deemed a remedy of value. Chronic arthritis has often been improved by this agent, and many cutaneous diseases,

particularly of the strumous variety, have yielded to its continued administration. Cod-liver oil is especially indicated whenever there is defective activity, whether inherited or acquired.

"The principal indication for its use is where an exalted temperature is maintained at the expense of the tissues. Cod-oil in such cases saves the tissues and the burning of histogenetic food.

"I employ it in cases of tuberculosis, scrofula, and in many forms of chronic disease when the above indications exist.

"Especial attention is called to its use in local disease, with cacoplastic or aplastic deposits.

"As the increased temperature is associated with increased frequency of pulse, we frequently associate it with veratrum viride. As a general rule, the stomachic bitters are not advantageous when we give this remedy. Many physicians fail to obtain advantage from the use of cod-oil because they give tonics in excess at the same time." (Scudder.)

Cod-liver oil is nutritive and alterative. It is contraindicated in fevers when there is a tendency to diarrhea, and also during the first six months of life and during the hot season.

Indications.—Emaciation, with elevated temperature and impaired powers of assimilation; scrofula, when manifested in osseous and fibrous tissue, as in caries and white swelling; cachexia produced by abscesses or prolonged suppuration; chronic catarrhal conditions of the bronchial and other mucous membranes; exhaustion from excesses; rachitis.

Dose.—Oil, ¼ to 4 drachms; emulsion, 1 to 2 ounces.

Usual Dose.—Oil, 1 to 2 drachms, three times a day; emulsion, 2 to 4 drachms, three times a day. Children may be given 1 or 2 drachms of the emulsion three times a day. It is usually better to take this agent before meals.

Oleum Olivæ—Olive Oil.

Olive oil constitutes a useful and pleasant laxative, and is frequently used for that purpose. It increases the secretion of bile, which may account for its apparent influence in favoring the expulsion of gall-stones. Where a fat or oil is not contraindicated, olive oil is one of the most efficient demulcents to administer in poisoning from corrosive irritating drugs. The forcible injection of olive oil into the urethra will often dilate a stricture and lessen the difficulty of introducing a sound or catheter.

The application of warm olive oil, made with gentle friction,

to painful and engorged mammary glands during pregnancy and after parturition, will lessen the pain and swelling. This agent is extensively employed to soften and facilitate the removal of crusts, scales and epithelial débris of various cutaneous diseases. Two parts of olive oil and one part of turpentine constitute a most valuable application to the abdomen in typhoid fever and in peritonitis. Olive oil also affords relief when rubbed over the body in scarlatina and measles.

Olive oil is laxative, emollient and nutritive.

Indications.—Constipation in children; irritation of the mucous membranes of the air-passages and alimentary canal; phthisis pulmonalis.

Dose.—1 drachm to 2 ounces, but it may be used freely.

Oleum Ricini—Castor Oil.

Castor oil exerts a special action upon the intestinal tract, and by mild irritation causes purgation. It requires from four to six hours to operate, its action being attended by little pain. It produces large, soft stools, and usually empties the entire intestinal canal. It should not be used as an habitual laxative, for it is liable to cause constipation. It is one of the best purgatives to use in conjunction with an anthelmintic.

In dysentery a few small doses of this oil will often aid much in the treatment. It may be mixed with equal parts of glycerine. A few drops of the oil of peppermint will render it more agreeable to the taste.

Castor oil is a mild cathartic, and may be administered even when inflammatory affections of the intestines are present. A dose of one ounce is very apt to cause vomiting.

Indications.—Intestinal diseases with colic, tenesmus and frequent watery, mucous discharges; irritating substances in the intestinal canal; cases requiring a non-irritant cathartic.

Dose.—¼ to 1½ ounces.

Usual Dose.—½ to 2 tablespoonfuls, repeated, if necessary, in two hours, in a warmed spoon, in coffee or hot broth or milk, or with the taste disguised by peppermint drops before and after taking the oil. For children the oil may be mixed with enough sugar to make a paste.

Oleum Terebinthinæ—Oil of Turpentine.

Turpentine is sometimes used internally for gastric or intestinal flatulence, particularly when the condition arises from an atonic state of the muscles of the stomach or intestines. In chronic intestinal catarrh, as well as in a catarrhal condition of any mucous membrane, turpentine is deemed a remedy of merit. It is also frequently employed in typhoid fever, not only for the relief of tympanites, but to check intestinal hemorrhage.

One part of turpentine and two parts of sweet oil makes a valuable application to the abdomen when there is tympanitic distension. The mixture should be thoroughly applied with the hand and the abdomen then covered with woolen flannel. In bronchitis and pneumonia one teaspoonful of turpentine and two tablespoonfuls of vaseline, thoroughly mixed, constitutes a good application to the chest. It should be spread on woolen flannel and renewed daily.

Oil of turpentine is stimulant, diuretic, cathartic, vermifuge, irritant and astringent to mucous membranes. Large or long-continued medium doses cause strangury and other irritations.

Indications.—Hemorrhages from the renal, bronchial, intestinal and nasal mucous membranes; chronic intestinal catarrh; catarrh of the bladder and urinary passages; chronic gonorrhea; intestinal ulceration, when the tongue is dry and dark-colored, the skin dry and husky and tympanites is present. Locally: Tympanitic distention in typhoid fever and other diseases; bronchitis and pneumonia.

Dose.—5 to 15 drops.

Usual Dose.—1 to 10 drops, in capsule or on sugar.

Oleum Tiglii—Croton Oil.

This agent is especially adapted to cases requiring a promptly-acting cathartic. A drop or two placed on the back of the tongue will cause catharsis in a short time, and it is said that four drops rubbed around the navel will produce the same result. Locally, croton oil is used as a counter-irritant. One part of this oil mixed with five parts of olive oil constitutes an application which is sometimes useful for its vesicating action on the skin in bronchial catarrh and in other conditions where prompt and prolonged

counter-irritation is desired. The addition of a little turpentine to the mixture makes its action more prompt.

Croton oil in small and medium doses is a prompt, safe and efficient cathartic. In large doses it is a powerful irritant poison.

Dose.—½ to 2 drops.

Usual Dose.—½ drop in pill, every hour until the desired effect is obtained.

Opii—Opium.

There are many abnormal conditions in which the quieting influence of opium or its alkaloids is urgently needed, and the cases are also numerous in which their obtunding power is unnecessarily invoked. In the employment of this agent great caution should always be exercised, and, when possible, all knowledge of its nature kept from the patient to whom it is administered. The indiscriminate use of this and other narcotics cannot be too strongly condemned, for thousands of unfortunate persons can truthfully date their ruin from the day of their first dose of these infatuating drugs.

In the necessary employment of opium considerable thought and good judgment are demanded. The cases requiring narcotic doses of this medicament, when carefully studied, will be found to be markedly characterized by morbid sensibility to pain and symptoms of impending nervous exhaustion. It should not, however, be employed in Bright's disease, strangulated hernia, or for the relief of pains in the head, as in some persons suffering from these affections even moderate doses of opium will cause violent mental excitement, hallucinations and extreme wakefulness. When possible, this drug should be avoided in the treatment of aged persons and children, as they are very susceptible to its influence. Large doses of opium are contraindicated in all conditions characterized by contracted pupils, small, weak and irregular pulse, slow respiration, dryness of the mouth and tongue, and profuse perspiration.

In small and frequently repeated doses opium is a superior remedy in all conditions characterized by profound depression of the entire organism—a depression resembling that manifested in paresis. In this condition there is torpidity of both mind and body, with a constant inclination to drowsiness. Here minute doses act as the needed stimulus. A dose sufficiently large for

this purpose can be secured by adding five drops of the tincture to four ounces of water and administering a teaspoonful of the mixture every hour or two. The remedy should be discontinued as soon as the indications for its use have disappeared. Opium, when employed in this way, is a most excellent alterative and prepares the way for other indicated remedies to completely remove the abnormal condition. In mental shock resulting from fright, and in which there is decided drowsiness, this agent, when given in minute doses, will do much toward improving the patient's condition. When lesions of the brain or its membranes are apparent, however, opium should never be used, even in small doses.

In very large doses opium lessens the frequency of the pulse, causes depression of the circulation, prostration of the muscular power, slow, soft respiration, languor, drowsiness, torpor or coma, pale features, contracted pupils, coldness of the limbs, usually retention of the urine, entire apathy to external agencies, and (unless vigorous treatment is resorted to promptly and persistently) death.

The following injection will aid much in the treatment of severe cases of diarrhea and dysentery: ℞ Starch water, ℥ii to ℥iv; opium, tr., gtt. v to xx. Mix and inject. Repeat every three hours if necessary.

Opium should be used only when the skin is soft and cool, the pulse full and free from hardness, and the mucous membranes moist.

"Opium in medicinal doses is a cerebral stimulant, and we will find this its most important use. From this stimulation comes sleep and rest to the nervous system.

"In less degree it is a stimulant to the spinal cord and increases functional activity of all parts supplied from it.

"Opium or its salts may be administered for the relief of pain, to produce sleep, or as a general stimulant to the vegetative processes, when the following conditions are present: A soft, open pulse, or where there is not the element of *hardness* and smallness; a soft (not dry) skin; a moist tongue; pallid face; and eyes dull, immobile or dilated pupils. It is contraindicated where there is a dry, contracted skin; small hard pulse; dry tongue; flushed face; bright eye, with contracted pupils.

"There is no remedy that has been so much or so badly used as this. It is highly prized by the profession, and yet every physician can recall cases where its administration has proven injuri-

ous rather than beneficial. It has gained this extensive use because of the marked relief it gives from pain, and even though it fails so frequently, the successes are estimated, not the failures.

"I believe the reader, by carefully studying the above indications and contraindications, will be enabled to use the remedy so as to obtain its full palliative and curative action, not having the unpleasantness of failure to accomplish the desired object, or injury to the patient to regret." (Scudder.)

Opium is sedative, antispasmodic, diaphoretic, stimulant and narcotic. When externally applied, it acts as a direct stimulant and an indirect sedative to the mucous, muscular and vascular systems.

Indications.—Pain; sleeplessness in exhausted conditions of the brain; muttering delirium, tremor and spasm of typhoid fever. Locally: Diarrhea and dysentery.

Dose.—¼ to 2 grains; extract 1-6 to 1 grain; fluid extract, 10 to 40 drops; deodorized fluid extract, 5 to 20 drops; tincture (laudanum), 6 to 15 drops; camphorata (paregoric), 30 drops to 4 drachms; tincture of deodorized opium, 5 to 15 drops.

Usual Prescription.—℞ Opium (deodorized tincture), gtt. x to xxx; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Oxydendrum Arboreum—Sourwood.

Sourwood has been extensively, and in many cases successfully, employed as a means of relieving urinary wrongs due to cystic and prostatic causes. It is also regarded as a remedy of value in anasarca and other forms of dropsy.

Oxydendrum arboreum is diuretic, tonic and refrigerant.

Indications.—Derangements of the portal circulation; dropsy, especially ascites.

Dose.—Fluid extract, 1 to 60 drops, specific medicine, 1 to 20 drops

Usual Prescription.—℞ Oxydendron, gtt. x to ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Panax Quinquefolium—Ginseng.

Ginseng has been employed in nervous dyspepsia with marked advantage. It is a true nerve tonic, and exerts a quieting influence. It aids the stomach in performing its functional action, and not only increases the muscular power of the stomach, but greatly

stimulates the gastric glands. It is especially adapted to cases in which the brain and nervous system have been overworked. The effects of ginseng are not promptly manifested, as it is slow in its action.

Panax quinquefolium is a nerve tonic and stimulant.

Indications.—Gastric derangements of nervous origin; nervous debility; loss of appetite; exhaustion of the brain or nervous system from overwork.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Prescription.—℞ Panax, gtt. x to xxx; water ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Pancreatinum—Pancreatin.

Pancreatin is extensively employed in dyspepsia and other wrongs of the stomach and intestinal canal. It is often administered with food per rectum. When so employed it should be mixed with milk or lukewarm water, and stirred to a consistence that will admit of injection from a syringe having a large nozzle. It should not be used with hot water, as heat lessens its activity. Pancreatin should be combined with an alkali, as its activity is destroyed by acids, and it should be taken ordinarily from two to four hours after meals, when the chyme has entered the intestine. It may also be administered immediately after eating, or with food, before the stomach contents are rendered sufficiently acid by the gastric juice to interfere with the activity of the pancreatin.

Indications.—Atonic dyspepsia, due to impaired secretion or defective composition of the juices secreted; acid dyspepsia, resulting from abnormal transformation of food in the stomach; dyspepsia of children who are fed chiefly upon milk and amylaceous diet; indigestion of fats and starches.

Dose.—3 to 20 grains.

Usual Dose.—7 grains, in pills, powder or solution.

Passiflora Incarnata—Passion Flower.

Passiflora relieves irritation of the nerve centers and improves sympathetic innervation. As a result of this action a beneficial influence is exerted upon the circulation and nutrition. It has been extensively employed in various forms of convulsions, and usually with satisfactory results. In dysmenorrhea it exerts a

relieving influence, and in neuralgia it has often proved useful. Passion flower has also been highly recommended in tetanus and the severest spasms of children.

That passiflora is not toxic is evidenced by the fact that it has been given in ten- and fifteen-drop doses every hour for six and eight hours, to infants less than one year old, without the slightest evidence of deleterious effects. It has also been administered to the very sick and weak without any harmful action.

"There is no anodyne effect from passiflora in the doses that we have given it. On the contrary, severe pain will defeat the sleep-producing power. The sleep that results from its administration is most refreshing and natural, and no headache or unpleasant sequences are noticeable.

"We have used specific passiflora, in from ten- to sixty-drop doses, well diluted and repeated every hour. From the failures we have had we believe that it does not do well when the tongue is dirty, heavily coated. But when given to a patient, young or old, with a clean tongue, it acts promptly and pleasantly. Whether there are any special indications other than those of the disordered nervous system, we cannot say. There may be others. Let us keep a sharp watch for them.

"In unison with the above facts regarding specific passiflora, it is an excellent remedy to be used with gelsemium. It greatly augments its action and may be given with it in any case. In the sleeplessness of typhoid, when the tongue is clean, passiflora has acted decisively and promptly. When aroused from sleep, if left to himself, the patient will soon fall asleep again.

In the sleepless, cholera infantum infected infant, and in the neurasthenic who has become so from overwork or abuse of the nervous system, as well as the wakeful old man or woman, passiflora is the remedy. When combined with, or alternated with specific pulsatilla, it forms an excellent treatment for diseases of women, especially so when these are due to catamenial disturbance."

Passiflora incarnata is nervine, antispasmodic and sedative.

Indications.—Delirium, especially that characterized by low muttering; sleeplessness following the excessive use of alcoholic stimulants; fretfulness of teething children; pelvic engorgement attended with severe pain; pain in the stomach which comes on an hour or two after taking food; pain in the head, with a sensation of great weight pressing upon the brain; pains in the abdomen and pelvis peculiar to pregnant women; cholera infantum, when

there are great restlessness and spasmodic conditions; distressing insomnia caused by cardiac disturbance.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Passiflora, gtt. xxx to ℥iv; water ℥iv. M. Sig. Dose one teaspoonful every hour to every three hours.

Penthorum Sedoides—Virginia Stone Crop.

In moderate doses this agent relieves irritation of the stomach and intestinal canal. Diarrhea, chronic nasal catarrh, chronic pharyngitis, chronic bronchitis with increased secretion, and chronic vaginitis with or without leucorrheal discharge, are among the prominent wrongs likely to present indications for this remedy.

"Stone crop exerts a most marked influence upon mucous membranes, especially when they have been subject to chronic inflammation. It removes irritation, promotes normal functional activity, and brings the structures back to a healthy condition. It has proven the most certain remedy in pharyngitis that I have ever employed, and has given such marked benefit in disease of the superior pharynx, posterior nares and Eustachian tubes, that I should not like to treat these cases without it. I have also used it with the spray apparatus in nasal catarrh, with most excellent results." (Scudder).

Penthorum sedoides is astringent and demulcent.

Indications.—Irritation of the mucous membranes, especially when they have suffered from inflammatory action.

Dose.—Fluid extract, 1 to 20 drops; specific medicine, 1 to 20 drops.

Usual Prescription.—℞ Penthorum, ℥i to ℥ii; water, ℥iv. M. Sig. Dose one teaspoonful every three hours.

Pepsinum—Pepsin.

Pepsin is extensively employed as a restorative where there is lessened secretion of gastric juice, and in atonic dyspepsia, imperfect digestion of infants, cancer of the stomach and gastric ulcer, it has often proved very useful. It is also frequently used to aid digestion in convalescence from acute and long illness. With improved digestion from its use, better blood, improved nutrition and increased strength are obtained. It must not, how-

ever, be given continuously for too long a time, as the function of the stomach may become impaired from disuse, the artificial digestion having replaced the natural process. Unless pepsin is positively called for by some direct or specific indication, it is better to withhold it until after other remedies have failed to cause the gastric glands to secrete a sufficiently large amount of their normal juice. Hydrochloric acid administered with pepsin promotes glandular activity to some extent.

In some cases nutrient enemata must be administered, and since the rectum possesses very feeble powers of digestion, foods so employed should always be predigested. Suppositories of peptonized meat are useful for this purpose.

Indications.—Functional gastric and gastro-intestinal wrongs of infants and children during dentition; impaired digestion in the stomach of nitrogenous constituents of food; gastric derangements manifested by tumid abdomen, emaciation, diarrhea and a tendency to vomit; sick headache due to gastric acidity; feeble or slow digestion attending convalescence from exhausting diseases; feeble digestion during long-standing chronic diseases.

Dose.—2 to 60 grains.

Usual Dose.—4 to 10 grains. It may be given in powder, or dissolved in glycerine, or in water acidulated with hydrochloric acid, directly after meals. Liquor pepsin may be used in doses of 1 to 2 drachms.

Ptelea Trifoliata—Wafer Ash.

Ptelea is employed with excellent results in chronic intermittent fever, and in chronic affections of the respiratory organs, such as atonic laryngitis, phthisis and bronchitis, it has often proved useful. In asthma it is a valuable remedial agent. It does not give immediate relief, but its continued use exerts a decided influence in a curative direction. Ptelea has also been used with curative effect in diarrhea and dysentery.

"Ptelea is an excellent tonic, hardly surpassed in its general uses by any agent of our materia medica, if we except hydrastis. It may be employed in all atonic states of the stomach and upper intestinal canal when it is desirable to increase the appetite and digestion. It exerts a specific influence in some cases of asthma, giving present relief and affecting permanent cures." (Scudder.)

Ptelea trifoliata is tonic, stimulant, alterative, diaphoretic and astringent.

Indications.—Chronic diseases, when there is a sense of constriction in the thorax and short respiration; reflex nervous disturbances due to derangements of digestion and assimilation; fullness and aching in the hepatic region; mental confusion and despondency; scanty, red urine, depositing a red sediment (urates) on cooling; asthma, especially when originating in disorders of the stomach.

Dose.—Fluid extract, 1 to 20 drops; specific medicine 1 to 20 drops.

Usual Dose.—1 to 15 drops.

Petroselinum Sativum—Parsley.

Parsley is employed with marked success in dysmenorrhea, very severe cases yielding to its curative influence after the failure of approved remedies to modify the patient's sufferings. In colliquative sweating of phthisis, as well as in the profuse perspiration attending cases of severe illness, it exercises a restraining influence, and in some dropsical conditions it constitutes a medicament of great usefulness.

A volatile oil (apiol) is obtained from the seeds of parsley. It is a nerve stimulant and antiperiodic, and is of value in intermittent fevers, dysmenorrhea, amenorrhea and colliquative sweating. The dose of the oil is from 2 to 5 drops in capsules.

"Use it in nephritis and cystitis when the urine is thick and very irritating and painful. It lessens irritation and increases the amount of urine and thus gives relief. Use a wineglassful of the infusion three or four times a day. It is a good remedy in strangury, urethritis or gonorrhea, with scalding passages of urine, lessening the irritability of the parts. It is a good accompaniment many times to acetate of potassium and other diuretic salts. Favorable results are obtained from its use in ascites, anasarca and any other form of dropsy. It is kindly received by the stomach, and may be used for a considerable length of time. The leaves make a good application to injured or swollen glands or to dry the lacteal secretion. It is not contraindicated by inflammations. An ointment of the powdered leaves and seeds destroys pediculi pubis. The seed contains a volatile oil, *apiol,* which is a nerve stimulant, and also has some antiperiodic properties. This oil is of some value in intermittent fevers as an antiperiodic and to check excessive sweating." (Locke.)

Petroselinum sativum is diuretic and aperient.

Indications.—Dropsy, especially that following scarlatina and other eruptive diseases; retention of urine; nephritis and cystitis, especially when the urine is thick, irritating and painful; urethritis when the urine causes a scalding sensation.

Dose.—Fluid extract, 10 to 60 drops.

Usual Dose.—15 to 30 drops.

Phenolis—Phenol—(Acidum Carbolicum, U. S. P., 1890).

Phenol checks and prevents fermentation and preserves animal tissues from decomposition. When applied undiluted, it acts as a caustic, causing considerable pain. As a disinfectant for the sick-room it has no superior. Two or three parts of phenol to one hundred parts of water makes an efficient application in surgical cases accompanied with purulent, offensive, or other unhealthy discharges. For douching the vagina, or for enemata in diarrhea, one or two grains to three ounces of water constitutes a strength deemed sufficient. One part of phenol to four parts of acetic acid and fifteen parts of water makes an excellent application in many cutaneous affections. A solution of from one to fifteen grains in three ounces of water is advised for washing out the bladder. Internally it is used in typhoid fever, puerperal fever, intermittent fever, pulmonary gangrene, and other diseases calling for a general antiseptic treatment.

In making a watery solution the phenol must be constantly stirred in order to avoid the liability of its settling to the bottom of the vessel undissolved. The odor of phenol can be rendered less objectionable by adding a few drops of the oil of lemon to it.

Phenol is antiseptic, disinfectant and caustic. Large quantities used either internally or externally soon cause dangerous toxic effects.

Indications.—Internally: Fetid discharges from the bowels; infectious diseases; all diseases of the digestive canal requiring a general antiseptic. Locally: Nearly all cases requiring an antiseptic dressing, application or injection.

Dose.—Glyceritum, 5 drops; specific medicine (solution), ¼ to 1 drop.

Usual Prescription.—℞ Specific phenol (solution), gtt. v to ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every three hours.

Phenylis Salicylas—Phenyl Salicylate (Salol, U. S. P., 1890).

Phenyl salicylate is a valuable remedy in chronic cystitis, and in gonorrhea it is often useful. In intestinal catarrh, especially duodenal catarrh and catarrhal jaundice, it constitutes an efficient remedial agent. It also exerts a relieving influence in the pains of neuritis and myalgia. Phenyl salicylate is recommended in vesical catarrh on account of its power of rendering the urine acid and reducing the amount of its contained pus. A disinfectant dusting powder is made by mixing one part of the drug with ten parts of starch; and an ointment of the strength of 10 per cent. has also been found useful.

Phenyl salicylate is antiseptic, antirheumatic and antipyretic. It has about the same action as salicylic acid, but very few or none of its unpleasant incidental effects. It stains the urine dark green.

Indications.—Rheumatism, especially chronic articular and muscular forms; phthisis and intestinal catarrh, as an antiseptic; vesical catarrh; summer diarrhea of children. Locally: Slow-healing ulcers; ozena and otorrhea.

Dose.—1 to 15 grains, but not to exceed 2 drachms a day.

Phoradendron Flavescens—American Mistletoe.

As an oxytocic this agent acts with much more certainty and promptness than ergot. It acts by stimulating the uterus to normal contractions, and does not, as does ergot, produce continuous or tonic contraction, so that it may be given at any stage of labor.

Phoradendron flavescens is antispasmodic, oxytocic and laxative.

Indications.—Insufficient action of the uterus; retained placenta of abortion; menorrhagia, metrorrhagia and all uterine hemorrhages, including post-partum; hemoptysis; diseases of the heart characterized by a weak action and low arterial tension; diseases of the brain and spinal cord, especially those in which congestion is marked; reflex convulsions of children when the paroxysms continue after the irritating cause has been removed; asthma, palsy and the neuroses.

Dose.—Fluid extract, 20 to 60 drops.

Usual Dose.—Fluid extract, 20 to 30 drops. The dose may be repeated in labor every twenty minutes until the desired effect is produced.

Phosphorus.

This agent stimulates protoplasmic activity, and is a valuable remedy in many cases of neurasthenia and chronic nervous exhaustion. In some cases of neuralgia, and especially of the fifth nerve, when accompanied by great debility, it exerts a corrective influence. It is also a remedial agent of value in caries, delayed resolution of bone, osteomalacia and rachitis, and in pernicious anemia it gives satisfactory results.

Phosphorus should never be used in large doses. It is a remedial agent only when administered in very minute doses, and when prescribing the remedy it should always be remembered that some persons have a peculiar susceptibility to the drug. Its long-continued use may cause general fatty degeneration.

"We employ phosphorus principally for its action upon the urinary and reproductive apparatus. It is especially useful to relieve vesical and prostatic irritation, especially when arising from or associated with sexual excess.

"We also use it as a nerve stimulant. In some cases its influence will be quite marked, relieving irritation and improving nutrition." (Scudder.)

Phosphorus is a stimulant to the nervous, vascular and secreting organs. In any but minute doses it is a powerful poison.

Indications.—Vesical and prostatic irritation, with mucoid discharges; fullness or dragging in the perineum; enlarged and pendulous testes; chronic ovaritis and chronic vaginitis; pneumonia, when pus apears in the sputa; cholera infantum, when there is nervous exhaustion, and the discharges from the bowels are slimy and frothy, with tympanites; results of sexual abuses or excesses.

Dose.—1-300 of a grain, gradually increased to 1-60 of a grain, but not to exceed 1-12 of a grain per day; specific phosphorus (alcoholic solution), ¼ of a drop to 5 drops.

Usual Prescription.—℞ Specific phosphorus, gtt. x to xx; water, ℥iv. M. Sig. Dose one teaspoonful every two to four hours.

Physostigma Venenosum—Calabar Bean.

In extreme nervous irritation physostigma exerts a relieving influence, and in convulsive affections produced by irritation it is employed with advantage. Physostigma stimulates the respiratory function and heart's action when there is great depression,

with difficult breathing, accompanied by a sense of compression of the chest, with a soft, feeble pulse and a cool, moist skin. In emphysema and in asthma with great muscular relaxation, it is used with benefit, and in bronchitis with dilatation its action is in a curative direction. In intestinal catarrh resulting from atony, and in catarrh of the mucous linings of the kidneys and bladder, it is deemed an efficient remedy. It has also been used extensively and satisfactorily in the tympanites and flatulence which is sometimes a source of distress during the menopause, especially when there is atonicity of the intestinal walls and constipation.

"In disease of the brain or spine, with contracted pupils, but cool surface, cold extremities and feeble pulse; in cerebro-spinal meningitis, with feeble, small pulse, contracted pupils and dullness of intellect; in puerperal convulsions, with feeble, tremulous pulse, eyes forcibly turned upwards, this remedy is sometimes indicated. It has been successfully employed in the larger dose in the treatment of tetanus, five drops being repeated as often as every one or two hours.

"Dropped in the eye it causes contraction of the pupil, and it is frequently used to antagonize the effect of belladonna." (Scudder.)

Physostigma venenosum is a powerful sedative and a spinal paralyzer. It should be used with caution. There is no known antidote to poisoning by this agent. Emetics should be given and the symptoms treated on general principles.

Indications.—Paralysis and tremors when not due to structural changes of the nerve centers; diseases of the nervous system, with weak pulse, cold surface, contracted pupils and mental torpor; impotence resulting from masturbation; imperfect erection, with prématurе seminal discharge on attempting coition; traumatic tetanus; strychnine and belladonna poisoning.

Dose.—Fluid extract, 1 to 3 drops; specific medicine, 1-10 to 3 drops.

Usual Prescription.—℞ Physostigma, gtt. v to x; water, ℥iv. M. Sig. Dose one teaspoonful every two to four hours.

Phytolacca Decandra—Poke Root.

In many abnormal conditions phytolacca occupies a place peculiarly its own. In the treatment of diseases of the glandular system this fact is many times markedly apparent. Its curative effect is so promptly manifested in inflammations and ulcerations

of the mucous membranes of the various parts of the body that there can be no doubt of its energetic power. In inflammation of the breasts its early exhibition will prevent the formation of abscesses, and in tonsillitis and the sore throat of scarlet fever it has no superior. In wrongs of the liver, especially when there is enlargement and induration, or a torpid condition of the organ, the patient should be given the aid afforded by this efficient medicament. In gonorrhea and leucorrhea phytolacca is deemed a remedy of decided merit, and in syphilis, especially of the tertiary form, it is thought by many to be essential to a rational treatment. It is also a remedial agent of great usefulness in the large number of chronic conditions in which the secreting, absorbing and eliminating vessels have become impaired, and it is one of our most efficient drugs in the chronic form of articular rheumatism, its long-continued employment doing much toward preventing a return of the painful affection.

"The tincture of the *fresh* root is one of my favorite remedies. It exerts a direct influence upon the processes of waste and nutrition, and, therefore, possesses those properties called alterative in a high degree. I have used it in secondary syphilis, in chronic skin disease and in scrofula with excellent results.

"It has a direct influence upon the mammary glands, and will generally arrest inflammation if given in the early stage. I have used it in scores of cases, and with a certainty that rarely follows the use of medicines. I also employ it in cases of sore nipples, both internally and locally, with good results.

"It is one of the most certain remedies we have in diphtheria, and in some seasons will cure nearly every case. I generally employ it in combination with aconite, and even when the larynx is threatened I feel a confidence that the remedy will cure if persisted in. In ordinary sore throat and in epidemic tonsillitis it is a favorite prescription.

"It is also a most valuable remedy in sore mouth, either in children or adult, and if a patient having another disease complains of sore mouth, phytolacca is suggested. Even the nursing sore mouth is frequently cured by this remedy.

" It is a prominent remedy in parotitis, and in its metastasis to the testes I would recommend it in preference to any other treatment. It may also be employed in gonorrheal and syphilitic orchitis, but not with so much certaintay." (Scudder.)

"Phytolacca exerts a direct influence upon the mucous membrane of the mouth, pharynx and larynx, if not upon that of the whole digestive tract. In diseases in which this is involved, such as stomatits, either of aphthous or catarrhal varieties, no matter

whether there be much fever or inflammation or not, or whether in child or adult, there is no superior remedy. In the gangrenous, maternal or mercurial stomatitis it is not so certain of action. But even in these diseases we would prefer it to many harsher remedies. In the common sore throat from cold—acute inflammation of the pharynx—when the patient complains of a general muscular stiffness and soreness, of aching pain and fever, and of a resulting difficult deglutition, phytolacca is an excellent remedy. It may be combined with the small dose of aconite and with gelsemium with great advantage. In *croup,* with high temperature and much hoarseness, we *always* administer aconite, phytolacca and gelsemium, together with stillingia liniment internally and externally. We believe that in these troubles phytolacca has a directly sedative effect. If it does not have this, it is certainly a synergist to the special sedatives. Prof. Scudder has said that 'no remedy excites a more marked antipyretic action than does this in a case of diphtheria with high temperature.'

"From the fact of its specific action on the throat, and its sedative effect, it *always* constitutes a very material part of our medication in diphtheria. We believe that no single remedy excels it in favorable action in this disease. It not only advantageously impresses the fever and mucous membrane of the fauces and pharynx, but it stimulates to greater activity the whole glandular system, and thus assists in ridding the body of the poison.

"The action of phytolacca on the mucous membrane as set forth in the foregoing is not more certain than is its action on the glands of the body. Many of all schools agree upon its having a specific action upon the mammary gland of the female; that it will stay mammary inflammation and abort suppuration. It is given internally and used locally in sore nipples. It is also of great service in relieving pain and other unpleasant sensations about the mammary gland at any time.

"Its stimulating action upon the glandular system makes it an excellent remedy in orchitis. Some recommend that specific pulsatilla be given with it in this disease." (Bloyer.)

"Phytolacca plays an important part in dermatological practice, is the testimony of many who have used it in this class of cases. The condition of the skin which calls for its use is one of 'indolent action, usually associated with vitiated blood.' The glandular system is also affected; generally of a scrofulous nature, although the skin may be inflamed yet it does not itch, owing to its non-activity. In these skin diseases it should be used both locally and internally as in those purely glandular affections before noted. Frequently the addition of iris versicolor to the prescription will prove of benefit in conquering some specially obstinate cases."

Phytolacca decandra is alterative, diuretic, laxative, resolvent,

antiscorbutic and antisyphilitic. In large doses it is emetic, cathartic and narcotic.

Indications.—Enlargement, inflammation or pain in glands; mucous surface of the fauces full and of dark color, the tonsils swollen, throat dry or covered with patches of tenacious secretion or ash-colored exudation; depressed function or imperfect secretion; fatty degeneration of the heart. Locally: Threatened abscesses in glands.

Dose.—Fluid extract, 1 to 15 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Phytolacca, gtt. x to xxx; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Pilocarpinæ Hydrochloridum—Pilocarpine Hydrochloride.

Pilocarpine hydrochloride exerts a stimulating influence upon the skin, and through this property becomes a useful remedy in chronic skin diseases characterized by a dry or scaly condition. In Bright's disease its diaphoretic action aids in eliminating through the skin products which otherwise must be eliminated by the overtaxed kidneys. It also constitutes an efficient means of removing pleuritic effusions, and in uremic poisoning it will aid much in the treatment. Small doses of pilocarpine are often useful in humid asthma, bronchorrhea and hiccough, and as a means of arresting the sweating of phthisis and the relief of ptyalism they are efficient. It has been highly recommended as a remedy in mumps, chronic enlargement of the cervical glands and adenitis of the inguinal glands. It is a galactagogue of some value. In catarrhal jaundice it is also deemed a remedy of merit, and in diabetes insipidus it is said to lessen the flow of urine. In the first stage of erysipelas very small doses of pilocarpine have been employed hypodermically with advantage.

Pilocarpine should never be employed internally when the heart is weak from thinning and atrophy of its walls or from fatty degeneration, nor when there is a tendency to pulmonary congestion and edema. It is also contraindicated in pregnancy, and in typhoid and other asthenic fevers.

Externally, in solution of the strength of one grain to two and a half drachms of water, it is used for dropping into the eye to dilate the pupil in iritis, choroiditis, beginning of peripheral cataract, and in glaucoma.

Pilocarpine hydrochlorate is sialagogue, diaphoretic, diuretic and antidotal to atropine poisoning. Atropine is also antidotal to pilocarpine (gr. 1-12 of atropine subcutaneously). Great caution should be exercised in the use of this drug.

Indications.—Edema and dropsy in diseases of the heart and kidneys, when there is diminished secretion or suppression of urine; chronic poisoning by mercury or lead (to obtain elimination of the poison through the sweat and saliva); first paroxysms of puerperal eclampsia, convulsions of various sorts, and singultus; conditions where profuse sweating is desired.

Dose.—Internally, 1-64 to ¼ of a grain, not to exceed one grain a day. Subcutaneously, 1-6 to ¼ of a grain, to obtain its full effect.

Pilocarpus—Jaborandi.

Jaborandi constitutes an efficient medicament in inflammatory rheumatism, and in rheumatic fever it is employed with much advantage. In chronic rheumatism it is useful as a means of eliminating urea, uric acid and other morbific products, and in dropsical conditions associated with disease of the kidneys it is a remedy of value. In febrile states, especially when nervous complications are anticipated, as well as when convulsions have occurred, it exerts a needed sedative and antispasmodic influence. In inflammation of the lungs or pleura, with exudation, it promotes resolution and aids in removing the exudate, and in bronchitis, with dry irritable or hoarse cough, it lessens the cough and lowers the temperature. It is also used with gratifying results in laryngitis and tonsillitis, and is especially valuable in stridulous laryngitis. In bronchial asthma it often affords prompt relief, and in puerperal eclampsia it has been used with some success. In acute mastitis, with suppression of milk soon after confinement, medium doses of jaborandi relieve the inflammation and restore the lacteal secretion. In case the milk suddenly becomes entirely suppressed, it is well to administer a few full doses.

When specifically indicated, in small and medium doses this agent exerts a curative influence in many abnormal conditions. When very small doses are required, the alkaloid pilocarpine may be used hypodermically.

"It is one of the most active diaphoretics known; a drachm

and a half of the powdered leaves in infusion, or a drachm of the tincture, in six ounces of hot water, taken in three or four doses inside of an hour, will produce profuse diaphoresis. It has been given in puerperal convulsions, threatened puerperal fever, to arrest the paroxysm of an intermittent, at the commencement of a bilious fever, in the early stages of rheumatism, and in dropsy.

"The alkaloid, pilocarpine, may be used by hypodermic injection, in doses of one-sixth to one-fiftieth of a grain, and produces the same effects as the drug given by mouth." (Scudder.)

"In full doses, jaborandi is the remedy of all others for establishing a favorable crisis in severe forms of acute disease. In inflammatory rheumatism, in pernicious malarial fever of different forms, in the wild delirium of typhoid fever, and in the intense pain of acute pleuritis, a drachm dose of this drug will often bring the disease to a favorable termination within an hour or two, when ordinarily we would not expect drugs to accomplish anything at all, unless from extended use. Sometimes the stomach will not tolerate the drug, and sometimes absorption will not go on properly, as in bad cases of congestive chill, and we then employ a corresponding dose of pilocarpine hypodermically; but where it can be administered by mouth, specific jaborandi is the remedy *par excellence*. Profuse perspiration does not always attend its action, but it equalizes the circulation, relieves internal organs of congestion, and promotes an even distribution of capillary blood, thus often disposing of urgent and dangerous symptoms.

"Another property highly prized in some quarters is the action of jaborandi in rigid os uteri. Here it ought to be given in full doses, say thirty drops in water, repeated once or twice, if necessary.

"The drug has become a prime favorite with many of our school for lessening rapidity of the pulse, reducing the temperature, and calming the erethism of various febrile and inflammatory diseases. It has few rivals and no superior among this class of agents. It should be preferred to aconite in all sthenic cases of the kind, and is not objectionable in asthenic cases, if the dose be properly regulated. It possesses the salutary properties of imparting a cooling sensation to the skin during its action, which is very grateful to patients suffering with pyrexia. It also relieves headache arising therefrom, calms nervous irritability and soothes local inflammatory action. In addition to its applicability in idiopathic forms of fever, it is excellent in many forms of symptomatic fever, such, for example, as pneumonia, erysipelas and acute rheumatism. In pneumonia it does well either alone or in combination with asclepias tuberosa; in rheumatism, especially the inflammatory form (acute articular), it is a favor-

ite agent in combination with rhamnus californica. In erysipelas echinacea is a good companion remedy, though the specific properties of jaborandi are sufficient to recommend it as a specific agent in this as well as in kindred complaints.

"While I have called attention to its everyday uses by the general practitioner, we must not forget its specific action on the parotid gland, which commends it in parotitis, in ptyalism, in suppression of milk, due to a specific action on the mammary gland, and in colliquative sweating." (Webster.)

Pilocarpus is sedative, diaphoretic, diuretic and sialagogue. Large doses should never be long continued, and the results of even a few large doses should be watched with extreme caution. Very large doses may arrest the heart's action.

Indications.—Muscular pains; pain with enlargement or puffiness of surrounding tissues; muscular spasm; fevers not marked by great debility; ptyalism and stomatitis; inflammation of the respiratory organs; albuminuria of pregnancy; inflammatory rheumatism, when the parts are swollen and painful; subacute rheumatism, with some pain and swelling about the joints, rendering them sore and stiff; profuse perspiration resulting from a relaxed condition of the cutaneous vessels; belladonna poisoning.

Dose.—Fluid extract, 1 to 5 drops; specific medicine, ¼ to 5 drops.

Usual Prescription.—℞ Jaborandi, gtt. x to ℥i; water ℥iv. M. Sig. Dose one teaspoonful every two hours.

Piper Angustifolium—Matico.

Matico is employed with good success in dyspepsia resulting from chronic affections of the stomach, and in diseases characterized by chronic discharges from the mucous surfaces it is deemed an efficient remedy. It has been highly recommended in gonorrhea, and in leucorrhea and gleet it has proved useful. Matico has also been employed to check hemorrhage from the lungs, bowels and kidneys with some success.

Piper angustifolium is astringent, stimulant, urinary tonic and aromatic.

Indications.—Chronic mucous discharges, such as leucorrhea, gleet and catarrh; hemorrhages. Locally: Cuts, wounds and indolent ulcers.

Dose.—Fluid extract, 1 to 20 drops; specific medicine 1 to 20 drops.

Usual Prescription.—℞ Matico, ʒi to ʒii; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Piper Cubeba—Cubeb.

Cubeb specially influences the urinary tract and all the mucous membranes of the body. It acts as a tonic, and exercises a power which restrains excessive secretion. It is extensively employed in gonorrhea, and is especially valuable in the latter stage of the disease. It is more efficacious in the chronic than in the acute form of gonorrhea. In leucorrhea cubeb has been used with good success, and in catarrh of the bladder it is often useful. In inflammation of the bladder it constitutes a medicament of value, and in chronic laryngitis and chronic bronchitis it is deemed a remedy of merit. In small doses cubeb increases the appetite and improves digestion.

Piper cubeba is stimulant, diaphoretic, diuretic, expectorant, carminative and stomachic.

Indications.—Excessive discharges, especially from the urethra; dyspepsia due to an atonic condition of the stomach; scalding of urine in women, and burning and irritation of the vulva; cystitis, after the acute symptoms have passed away; a sensation of cutting and constriction in the urethra after micturition; frequent urination with smarting tenesmus and passage of ropy mucus; inflammation of the prostate.

Dose.—Fluid extract, 5 to 20 drops; specific medicine, 5 to 20 drops.

Usual Dose.—5 to 10 drops, in a tablespoonful of water, every two or three hours.

Piper Methysticum—Kava-Kava.

Kava-kava acts upon the stomach much like the bitter tonics, and markedly increases the appetite. It acts directly upon mucous membranes, quickly restoring their tone. It is one of our best stomachic tonics, and greatly improves digestion and assimilation. In chronic diarrhea it constitutes a useful medicament, and is especially valuable in cases characterized by large catarrhal discharges and associated with an atonic condition of the entire digestive tract.

Kava-kava exerts a specific action upon the kidneys and the entire genito-urinary apparatus. In medium doses it will speed-

ily produce an abundant secretion of limpid urine, which is readily passed. In acute gonorrhea it is employed with gratifying results, and in the subacute and chronic forms of the disease it is also used with advantage, although it is slower in its curative action. It is employed in gleet with satisfactory results, and in leucorrhea it often aids in the treatment. The power of soothing irritation and relieving inflammation possessed by this agent has been found useful in many abnormal conditions.

Piper methysticum is tonic, stimulant, sialagogue and diuretic. Large doses produce an intoxication of a reserved and drowsy character.

Indications.—Irritation of the surfaces of the genito-urinary tract; chronic catarrhal affections of the various organs; chronic inflammation of the neck of the bladder; acute vaginitis and acute urethritis; pain during urination.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Dose.—10 to 20 drops, in a tablespoonful of water every three to six hours.

Plantago Major—Great Plantain.

Plantain exerts a soothing influence upon the brain, and aids in inducing refreshing sleep. It has been employed with much advantage in nocturnal enuresis of children, due to relaxed sphincter, and in menorrhagia and leucorrhea it has often proved useful. It is also employed internally and locally in erysipelas, inflammation of glands, especially the mammary glands, erythematous skin diseases, earache, toothache, cholera infantum, dysentery and diarrhea. In toothache, the carious tooth should be cleansed, made dry, and the medicine applied on cotton. Locally it is applied diluted to accessible parts.

Plantain was a favorite remedy of Dr. Wooster Beach and his associates, and they extensively employed it both internally and as a local application to insect and serpent bites and stings, with wonderful success. In reporting a case treated, Dr. Beach said:

"A gentleman was bitten above the knee by a spider. A few minutes after he perceived a pain shooting upward from the spot, which soon reached the region of the heart. A quantity of plantain was immediately gathered and bruised, and the juice squeezed

out and swallowed, which stopped the progress of the poison, so that a cure of the bite was quickly obtained."

Plantago major is alterative, diuretic, antiseptic, astringent, anodyne and demulcent.

Indications.—Diseases of the gastro-intestinal mucous surfaces when there are pinching or colicky pains; inflammatory affections of the skin, when there is pricking, itching or burning pain; toothache and earache.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Plantago major, gtt. x to xx; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Podophylli, Resinæ—Podophyllin.

Podophyllin in small doses stimulates intestinal secretion and peristaltic action. It also acts upon the glandular system. Its action on the kidneys is in the direction of normal activity, and as a means of restoring secretory power to these organs it is highly esteemed. In hepatic torpor it is an efficient remedy, and in diarrhea, both acute and chronic, especially when there are watery, frothy and painful evacuations, it is employed with good success. In chronic diarrhea the one one-hundredth of a grain three or four times a day will act curatively. In conditions characterized by dry stools, constipation and bloated bowels it often constitutes a needed medicament. Fullness of tissues and veins is a prominent feature of cases benefited by this agent. It is not a suitable remedy for pinched-appearing patients. To meet the indications given below, it should be used in very small doses, and preferably in trituration or in pill form.

"To obtain the direct action of podophyllin, we prepare it for use by thorough trituration with sugar of milk or white sugar. I prefer the trituration one part of podophyllin to one hundred of sugar.

"The specific use of podophyllin in this form is to arrest increased mucous secretion from the small intestine and give it power to perform its function. It will cure acute or chronic diarrhea with mucous discharges, and in some cases of cholera infantum it 'acts like a charm.' No one who has used the trituration of podophyllin in these cases would be willing to dispense with it, and many will find it of advantage in other cases.

"This remedy has been employed in doses much too large,

and physicians are fast learning that in this case, as well as in some others, small doses are very much better than large ones." (Scudder.)

Podophyllin in very small doses is a powerful stimulant to the processes of digestion. In large doses its action is much the same as that of podophyllum.

Indications.—Irritable conditions of the gastro-intestinal tract causing diarrhea of profuse, watery and offensive stools, with severe cutting pains; dysentery, with a mucous or bloody discharge of a bad odor; gastric and intestinal dyspepsia, with atony of the digestive apparatus, as indicated by fullness of abdomen, full, expressionless tongue and impaired activity; diarrhea, when the discharges are light in color and contain mucus or undigested food.

Dose.—Podophyllin, ⅛ to 1 grain; podophyllin triturated (1 to 100), 1 to 20 grains.

Usual Dose.—¼ to 1 grain, every two hours, as a drastic cathartic, until the desired effect has been produced. For other purposes, ⅛ to 5 grains of podophyllin triturated (1 to 100). In many cases the 3x trituration will constitute a desirable form in which to administer this drug.

Podophyllum Peltatum—Mandrake.

Mandrake increases the activity of the liver and upper intestines, influences the ductless glands in a curative direction, and favors blood-making. It is employed with marked advantage in that condition known as torpor of the liver, and in hepatic wrongs generally it is a remedy of corrective power. In hemorrhoids, when dependent upon a sluggish portal circulation, it exercises a relieving influence, and in eruptions of the skin it is often useful. In small doses, associated with bitter tonics, it has been highly recommended as a superior remedy in old syphilitic lesions. In gall-stones it is deemed an efficient removing agent. In this condition podophyllum (or podophyllin) is administered in large doses, and as soon as the drug begins to operate about six ounces of olive oil are added to the treatment.

"Of all the valuable properties pertaining to podophyllum, perhaps none is more remarkable than its power, in connection with olive oil, of removing biliary concretions. That it does possess this power we have demonstrated again and again. The

symptoms indicating the existence of these concretions are manifold, yet so well-marked that the diagnosis is not difficult. The ordinary symptoms indicating a functional disturbance of the liver, such as furred tongue, bad taste in the mouth, sallowness of the skin, eyes, etc., are usually present. The special symptoms are, in many cases, a seated pain in the right epigastrium, which both internal and external means fail to alleviate; a feeling of distension or fullness in the region of the liver; bowels sometimes constipated, at other times diarrhea; but the most certain symptom is alternate diarrhea and constipation; severe pain in the head, accompanied with nausea and vomiting of bilious matter; sometimes the patient is attacked at night with a severe spasmodic pain in the region of the liver, with difficult respiration, and is only relieved by free vomiting, which requires to be artificially produced, as the spasm is generally so great that it will not take place spontaneously. Other symptoms, as emaciation, extreme sallowness of the skin, cough, sudden faintings, scanty and high-colored urine, etc., are sometimes present. Many cases of periodical sick headache are entirely dependent upon this cause." (Coe.)

Podophyllum peltatum is diuretic, diaphoretic, resolvent, alterative, cholagogue, emmenagogue and vermifuge. In large doses it is emetic and drastic cathartic. In very large doses it is an irritant poison.

Indications.—Full face, full, oppressed pulse or full tongue with yellowish or pasty coating; dizziness of the head; portal engorgement, with tendency to hemorrhoids; hypogastric pain with a sensation of weight; sluggish venous circulation, shown by fullness of superficial veins; constipation from want of sensibility of the rectal mucous membrane; dull, passive headache, with soreness of the eyeballs; torpor of the portal circulation.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, ¼ to 10 drops.

Usual Dose.—¼ to 5 drops.

Polemonium Reptans—American Greek Valerian.

Polemonium exerts a corrective influence in diseases characterized by unhealthy secretions, and in febrile diseases and in inflammation of the respiratory apparatus it is an efficient diaphoretic and expectorant. It also constitutes a desirable means of producing determination of blood to the surface.

Polemonium reptans is astringent, alterative, diaphoretic and expectorant.

Indications.—Bronchial and laryngeal affections; coldness of the surface; dry and constricted skin; internal venous congestion; general languor.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—10 to 20 drops.

Polygala Senega—Senega.

Senega exerts an energetic influence upon mucous membranes. It is employed with much advantage in chronic bronchitis, and in the latter stage of pneumonia it is often useful. In catarrhal inflammation it is a valuable remedy, but it should not be administered until after the acute stage has somewhat subsided. Senega also constitutes an efficient medicament in rheumatism, especially when associated with dropsy from glandular enlargement, and in amenorrhea it has often proved corrective.

Polygala senega is diaphoretic, diuretic, expectorant, emmenagogue, stimulant and sialagogue. In large doses it is emetic and cathartic. In active inflammation its use is contraindicated.

Indications.—Relaxed conditions of mucous membranes, especially of the respiratory tract; sense of tightness and oppression across the chest, with a dry and irritating cough; chronic catarrh and commencing stages of croup; hoarseness, especially when there is extreme dryness of the throat; accumulation of albuminous mucus in the chest, which it is difficult to expectorate.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Senega, gtt. xx to ʒiv; water ℥iv. M. Sig. Dose one teaspoonful every hour to every three hours.

Polygonatum Multiflorum—Giant Solomon's Seal.

Polygonatum exerts a direct action upon the circulation, and especially upon that of the venous system. In congestion of the liver and spleen it is employed with good results, and in diseases characterized by congestion of the intestines it may well constitute a part of the treatment. In leucorrhea and menorrhagia, when due to irritated and relaxed mucous membranes, it is an efficient remedy, and in acute and chronic irritation of the bowels, with pain and burning sensations, this agent is often useful.

Polygonatum multiflorum is tonic, mildly astringent and mucilaginous.

Indications.—Irritated and relaxed mucous membranes; leucorrhea and menorrhagia; debility, especially in females; irritable conditions of the intestines, especially when attended with burning sensations; congestion of the liver, spleen or intestines; inactive portal circulation; hemorrhoids.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—5 to 15 drops.

Polygonum Punctatum—Water Pepper.

Polygonum favors normal activity of the pelvic viscera, including the reproductive and urinary organs. In all diseases characterized by depression or torpor of these organs it constitutes a stimulant of great value, and in congestion of the uterus and ovaries it is employed with gratifying results. It is a superior emmenagogue, and is especially indicated when the menses are arrested by cold. Water pepper is a very useful remedy in depression following the active stage of fevers and inflammations. It increases the capillary circulation, causing the skin to soon become warm and moist. It also includes within its curative range all wrongs resulting from suppression of secretions by cold.

Polygonum punctatum is stimulant, diaphoretic, diuretic, emmenagogue, antiseptic and vesicant.

Indications.—Tensive pain in back and legs; harsh, inactive skin; suppression of perspiration; suppression of menstruation from cold; amenorrhea due to atony; depression after active stage of fevers and inflammations.

Dose.—Fluid extract, 1 to 15 drops; specific medicine, 1 to 15 drops. In suppression of menstruation the dose should be administered in hot water, and repeated four times a day.

Usual Prescription.—℞ Polygonum punctatum, gtt. x to ʒii; water, ʒiv. M. Sig. Dose one teaspoonful every hour to every three hours.

Polymnia Uvedalia—Bearsfoot.

Polymnia acts directly upon the spleen, and controls its circulation. It is employed in enlargement of the spleen from any

cause with speedy reducing effect, and in chronic enlargement of the liver its beneficial action is promptly manifested. In chronic metritis, with hypertrophy, it is an efficient remedy, and in hypertrophy of the cervix uteri it has often proved a much needed remedy. In low inflammatory deposits, and impaired blood making, with tumid abdomen, it is also a remedy of curative power.

An ointment of uvedalia is also employed in the above-named enlargements as a local application.

"Polymnia powerfully affects those parts supplied with blood by the branches of the celiac axis. It is the remedy for congestion of these parts. Given internally in small doses, and applied warm locally and well rubbed in it forms the most certain remedy for all splenic enlargements, and especially for 'ague cake.' It is a remedy for other glandular enlargements, and has favorably influenced the hypertrophied uterus. Dyspepsia, due to engorged vessels, and associated with a feeling of heaviness, sinking, burning, and fullness of the epigastric region, is benefited by it. It will remove low inflammatory deposits, chronic metritis, uterine hypertrophy, and sub-involution. Hepatic and pulmonary engorgements are conditions in which it should not be forgotten. Full, sodden, and inelastic tissues always indicate this remedy." (Locke.)

Polymnia uvedalia is antispasmodic, anthelmintic, antirheumatic, stimulant and alterative.

Indications.—Enlargement of the spleen, with sensation of weight and dragging; flabby and sallow tissues, as in chronic splenitis; splenic enlargement from malarial influence; mammary abscesses; intermittent fever; chronic rheumatism; sensation of fullness, burning and weight in the region of the liver, stomach and spleen.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Polymnia, gtt. xxx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour or two.

Polytrichum Juniperinum—Haircap Moss.

Haircap moss constitutes an excellent remedy in anasarca, ascites, urinary obstruction and suppression of urine, as it is an energetic diuretic and causes a very large evacuation of urine. In difficult micturition of pregnancy it exerts a corrective in-

fluence, and in acute gonorrhea with severe burning pain on passing urine, its action is modifying in character. It somewhat relieves the pain of urinary calculi, as well as exerts an influence unfavorable to their formation. In uric acid and phosphatic gravel it is also a remedy of some value.

Polytrichum juniperinum is hydragogue and diuretic.

Indications.—Suppression of urine from cold; uric acid diathesis; dropsical conditions; irritable conditions of the bladder; scanty urine.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—10 to 30 drops well diluted, every hour to every three hours.

Populus Tremuloides—White Poplar.

White poplar is a tonic and stomachic of decided activity. It improves the appetite and strengthens digestion, exerting a corrective influence upon the upper intestine. It also acts directly upon the urinary organs, and is especially valuable when there is a sensation of heat and burning in the urethra and meatus. In intermittent and remittent fevers it has been employed with marked success.

White poplar was highly esteemed by the early Eclectics. Dr. Young, a follower of the teachings of Dr. Wooster Beach, wrote of it as follows: "I have prescribed the poplar bark in a variety of cases of intermittent fever, and I can declare from experience that it is equally efficacious with the Peruvian bark, if properly administered. It is also a most speedy and effectual remedy in hysteria." Dr. Beach said that "in dyspeptic states of the stomach and bowels white poplar is a valuable remedy, owing to its tonic and stimulant powers."

A recent writer claims that a strong infusion of the bark will cure those forms of intermittent fever of a chronic and irregular character, while at the same time the pathological lesions of the liver, spleen, and kidneys, which accompany the chronic disorder, gradually disappear, with the ultimate complete restoration of their physiological functions. These results are accomplished without the unpleasant effects which occur from the protracted use of quinine. This writer, passing through a severe epidemic

of malarial disease, found that malarial hematuria was very common, and very hard to cure. He put his patients on an infusion of cottonwood bark—a species of poplar allied to populus tremuloides—and found the symptoms to yield rapidly, and not only the hemorrhage, but the jaundice, and other conditions depending upon derangement of the liver and stomach. He also found that the results obtained by this remedy were more permanent than those which followed the use of quinine in some cases.

"Both populus and populin have a decided affinity for the genito-urinary tract. The remedy is thought to aid the recuperative powers of the kidneys when undergoing granular degeneration. In tenesmic vesical irritation after urination it is decidedly effective. In these cases minute doses—a fraction of a drop—are most effective. Professor Webster suggests its trial in stubborn cases of uterine congestion and prostatic hypertrophy. Its influence is best shown in cases characterized by general debility, with impairment of the nutritive functions of the body. The presence of salicin gives to populin a sedative action on the sexual function which may render it useful as a sexual sedative." (French.)

Populus tremuloides is tonic, alterative, diaphoretic, diuretic and vermifuge.

Indications.—Indigestion, accompanied by flatulence and acidity; atonic dyspepsia, especially when there is great debility, hepatic torpor or emaciation; painful micturition, especially when there is scalding of the parts involved and a sensation of heat and burning in the urethra and meatus; suppression and retention of urine; hysterical conditions; intermittent and remittent fevers; debilitated conditions; night sweats; intestinal worms; tenesmic vesical irritation, especially tenesmus after urination.

Dose.—Fluid extract, 15 to 60 drops.

Usual Dose.—20 to 30 drops after meals.

Potassii Acetas—Potassium Acetate.

The acetate of potassium is a remedy of curative power in a wide range of abnormal conditions. In acute articular rheumatism it is employed with advantage, and in the dropsy following scarlet fever it has no superior.

"The acetate of potassium is the typical *renal depurant,* and when it is deemed necessary to increase the process of retro-

grade metamorphosis in the blood, and at the same time increase elimination by the kidneys, this remedy may be employed.

"In many forms of disease it becomes necessary to remove old and broken-down tissues before a cure can be effected. It is impossible to make good blood, if there are old and effete materials in it, as it is impossible to improve nutrition if the old tissues cannot be gotten out of the way.

"Thus in some cases of chronic ague, it is true, as claimed by Dr. Golding Bird, that ten days or two weeks of acetate of potassium will cure when antiperiodics have wholly failed.

"This is also true in some remittent fevers, as well as inflammations. I have been accustomed to say to my classes that I should rather have acetate of potassium in cases of scrofula, and inflammations with cacoplastic deposits, than all the compound syrups that were ever concocted.

"Acetate of potassium should be used, largely diluted, to the extent of grs. xxx to ʒiij in the course of twenty-four hours." (Scudder.)

The acetate of potassium is alterative, diuretic and diaphoretic. In doses of two or three drachms it causes purging and copious watery discharges from the bowels, and a greatly increased flow of urine.

Indications.—Dropsy following scarlet fever; ascites of hepatic origin; rheumatism of the acute articular form; uric acid diathesis; morbid or disintegrated material retained in the blood; secondary syphilis; chronic skin diseases; chronic and acute nephritis.

Dose.—10 to 60 grains.

Usual Dose.—10 to 30 grains, largely diluted.

Potassii Bichromas—Potassium Bichromate.

In very large doses the bichromate of potassium is an irritant and caustic, and its effects are immediately violent. In small doses, alternated with aconite and phytolacca, this agent is of great value in many cases of diphtheria and pseudo-membranous croup. In these cases it should also be employed as a gargle every two or three hours. One-half of a grain of the powder dissolved in four ounces of water will make a gargle of sufficient strength. If nausea should be produced by this prescription, more water should be added to it. Sore throat resulting from cold, and, in fact, nearly all ordinary sore throats, are promptly relieved by this gargle.

In doses of one one-hundredth of a grain, well triturated with sugar of milk, the bichromate of potassium will relieve dry, irritable bronchial coughs. It is also useful in hoarseness from cold, with the accompanying dry, hard and irritating cough. Harsh rasping cough in the upper air passages is influenced in a curative direction by the continued use of this remedial agent, and in all conditions in which there is an exudation on the mucous membranes of the throat it constitutes a superior medicament.

Externally the bichromate of potassium in powder or solution (one to four drachms to three ounces of water) is employed as a caustic for condylomata, scrofulous and cancerous growths, and especially as an application to nasal polypi and other new growths.

Bichromate of potassium is antiseptic and alterative. In powder or strong solution it is caustic. In large doses it is a poison.

Indications.—Exudation upon the mucous membrane of the throat, as in diphtheria and pseudo-membranous croup; fetor of the breath and excretions; tendency to bleeding of the mucous membranes; throbbing headache at angles of forehead. Locally, as a gargle: Hoarseness, with thickening and irritation of the membrane of the throat; exudation upon the mucous membrane of the throat.

Dose.—1/8 to 3/4 of a grain (the latter is emetic).

Usual Prescription.—℞ Bichromate of potassium, gr. ½; water, ℥iv. M. Sig. Dose one teaspoonful every two hours.

Potassii Bicarbonas—Potassium Bicarbonate.

The bicarbonate of potassium exerts an unmistakable corrective influence in all cases characterized by chronic acidity of the stomach, and in rheumatism and gout it is used with advantage.

In acid dyspepsia this agent should be taken during or after meals, but when acidity arises from fermentation of food it should be administered before eating.

"With a leaden pallor of tongue, and feeble, tremulous muscles, potassium may be given with advantage, and the bicarbonate will usually be well borne. With this indication prominent, the remedy will cure rheumatism, be a benefit in fevers and inflammations, and relieve many forms of chronic disease.

"It should be known that there is a marked difference between the action of sodium and potassium, even as a bath, and some care should be used in their selection." (Scudder.)

The bicarbonate of potassium is antacid, alterative and diuretic.

Indications.—Indigestion, with excessive formation of acid; scanty urine, containing uric acid, with irritability of the bladder and nervous system; engorgement of the liver from excess in eating, or from chronic malarial poisoning.

Dose.—5 to 60 grains.

Usual Dose.—15 to 30 grains, largely diluted with water.

Potassii Bromidum—Potassium Bromide.

This salt exerts an influence throughout the body, but its chief action is on the nervous system. It lessens the rapidity of the flow of ideas, and causes somnolence. The sleep resulting from its administration is of a dull and heavy character, not refreshing, and does not occur when there is severe pain, or much mental anxiety or grief. The bromide of potassium depresses the motor areas and diminishes the reflex excitability of the spinal cord, and thus causes marked depression in muscular activity. Full doses cause respiration to become slower and more shallow, owing to slight depression of the respiratory center. It also depresses the circulation, causing the pulse to become slower, softer and weaker. The long-continued use of the drug causes anesthesia of the bladder, skin and mucous surfaces.

The bromide of potassium is eliminated chiefly by the kidneys, although there is a certain amount of elimination by means of the saliva, intestinal and mammary glands and bronchial mucous membrane. Notwithstanding the various ways in which rapid elimination of the drug takes place, however, under prolonged administration it tends to accumulate in the system, especially in the blood.

The bromide of potassium is useful as a means of allaying excessive brain activity, and in sleeplessness dependent upon nervous excitement it is an efficient remedy. In headache caused by cerebral congestion it exerts a soothing influence, and in epilepsy it is used with some success, but in the latter affection it is inferior to the bromide of ammonium. In infantile convulsions the bromide of potassium is deemed an efficient remedial

agent, and it is used with benefit in disturbances due to irritation of the dental nerve. Its corrective influence is manifested in all conditions resulting from increased reflex excitability, and it is, therefore, an indicated medicament in the disturbances of the menopause, and it is also of value in spasmodic asthma, laryngismus stridulus, whooping-cough and other coughs of reflex origin.

Bromide of potassium is sedative to the nervous system. In large doses it is an irritant to mucous surfaces. Its long-continued exhibition is liable to cause toxic symptoms, such as skin eruptions, catarrh of the mucous membranes, loss of appetite, diarrhea, emaciation and slight psychic disorder. Its excessive use impairs the nutrition of the brain and nerve centers.

All of the bromides are contraindicated in conditions of great debility, anemia, or fatty or weak heart with low arterial pressure.

As the bromides—including this salt—constitute an important class of remedial agents, it may be well to here quote from Dr. G. H. Butler's excellent "Materia Medica" the following brief summary of their therapeutic action:

"The bromides are especially useful in allaying excessive brain activity, the insomnia (particularly the sleeplessness dependent upon nervous excitement, exhaustion, and irritability) and headache of cerebral congestion, yielding readily to these remedies. They are undoubtedly the most efficient medicinal agents for the relief of epilepsy, being given either alone or in combination with some vegetable bitter. Feré combines with them an intestinal antiseptic, asserting that the union lessens the tendency to bromism. Recent studies of Nencki on the power of potassium bromide to replace, in part, sodium chloride in the tissues suggested the idea of withdrawal of all salt from the epileptic's dietary and to replace it with small quantities of bromide. This permits of complete bromization with smaller quantities and is a distinctly useful procedure. Being such marked depressants of the reflex centers, they are of decided benefit in nervous spasmodic disorders, and particularly valuable in infantile convulsions. During dentition children suffer from various disturbances due to irritation of the dental nerve—convulsions, cough, indigestion, diarrhea, strabismus, etc.—in all of which the bromides, being powerful depressants of the reflex mechanism, prove of great value. Whenever there is increased reflex excitability the bromides are indicated. They are therefore valuable in the reflex disturbances of the menopause, spasmodic asthma, laryngismus stridulus, whooping-cough, and other coughs

of reflex origin. They have also been used in tetanus and strychnine poisoning. Excessive nervous irritability is quickly relieved by these remedies, either singly or in combination with some of the antispasmodics, such as asafetida, valerian, etc. Because they depress the sexual mechanism they are of decided benefit in spermatorrhea of the plethoric or in the condition arising from irritation of the deep urethra. Menorrhagia resulting from excessive ovarian excitement is frequently relieved by these agents, while nymphomania and delirium tremens are often greatly benefited by full doses of the bromides. The ammonium bromide has been employed with benefit, it is said, in diabetes of nervous origin. Cerebral vomiting and the vomiting of pregnancy are sometimes singularly amenable to the influence of the bromides. A combination of sodium bromide, spirit of nitrous ether, and tincture of aconite, in anise water, as a remedy in acute febrile attacks of children with delirium is of distinct value. Small doses are given at frequent intervals until there is a decided improvement in the symptoms. The sedative action upon the circulatory apparatus exerted by potassium bromide renders it valuable in cardiac irritability when not due to anemia. It is particularly useful in quieting the heart's action in exopthalmic goiter. The bromides are distinctly valuable in combination with chloral to relieve chordee and to diminish the tendency to sexual excitement which is antecedent to this condition. In irritative cystitis the bromides are also of service. Bromides are useful in the convulsive respiratory disorders, and are also helpful in seasickness. Diluted hydrobromic acid is used for the same purposes as the bromides, some clinicians preferring it to the latter to quiet the delirium of simple continued fevers. It is employed extensively to relieve the symptoms of cinchonism. Bromoform is useful as an antispasmodic in whooping-cough, but it should be carefully administered, as dangerous collapse, as in chloroform poisoning, has been frequently reported.

"The bromides should be given in solution, and when long continued, as in the treatment of epilepsy, they should be accompanied by restorative agents. Carbonated waters, milk, and aromatic elixir serve as efficient vehicles to disguise the taste of these salts.

"Children acquire a remarkable tolerance for the bromides, so that large doses may be given them with little danger.

"Bromoform may be dropped into a spoonful of water and administered in this simple manner, or it may be dissolved in glycerine.

"The diluted hydrobromic acid should be given in water or syrup."

Indications.—Sleeplessness and nervousness due to nervous

irritation; unnatural excitement of the sexual organs; epilepsy, with irritation of the sexual organs; delirium of acute diseases when there is muscular tremor; cholera infantum, with great restlessness and sleeplessness; neurasthenia; spasmodic affections, puerperal eclampsia and infantile convulsions; vomiting of pregnancy and hysterical uterine cramps; nocturnal spasmodic coughs and whooping-cough; sexual irritability, with too frequent erections and too frequent emissions.

Dose.—5 to 20 grains.

Usual Dose.—1 grain for each year of age of patient up to twenty may be given, but from 2 to 10 grains is usually a sufficient dose for adults. It should be given largely diluted with water. The dose may be repeated every hour if necessary.

Potassii Chloras—Potassium Chlorate.

When specifically indicated the chlorate of potassium is a valuable remedial agent, but when contraindicated it is liable to do much harm. Large doses, or small ones long continued, may cause dangerous conditions, especially in children. It should never be administered on an empty stomach, for fear of too rapid absorption. It must never be triturated with inorganic bodies which have an affinity for oxygen, as dangerous explosions are very likely to result from such triturations. Mixtures of sugar, tannin, sulphur, charcoal and substances of a similar character, with the chlorate of potassium, should, therefore, never be triturated. If such mixtures are ever necessary, they should be powdered separately, and then mixed on paper. The chlorate of potassium, sulphate of iron and hypophosphate of calcium, mixed in equal parts, are explosive. It is seldom necessary to give this salt in combination. If other drugs are indicated it is better to administer them in alternation with it. When writing prescriptions for the chlorate of potassium physicians should bear in mind the fact that the drug is not freely soluble in water. At ordinary temperature, water will dissolve only about one-sixteenth its weight of the salt; and if heat be employed to effect a solution, the excess of chlorate of potassium will separate as soon as the liquid cools. The administration of the chlorate and iodide of potassium in combination should be avoided.

A solution consisting of one drachm of the drug to from

four to eight ounces of water constitutes a local application of sufficient strength in most cases.

"The indication for chlorate of potassium is a peculiar fetor resembling decomposing animal matter; a fetid lochial discharge or menstrual flow has the characteristic odor. In cynanche maligna, and occasionally in diphtheria, we have the characteristic dissecting-room smell, as we have in the worst forms of influenza. In all of these cases we administer chlorate of potassium, and use it as a local application.

"It is especially the remedy in the puerperal state, when puerperal fever is feared from retained placenta, decomposition of blood-clots, or from the absorption of an unpleasant lochial discharge. Of course, the physician will not allow a placenta to be retained at full term, but previous to the fifth month it may not be so easy to remove it, and the patient suffers less from its retention than she would from forcible removal. In such cases I always feel that my patient is safe if I prescribe chlorate of potassium.

"I am very careful not to administer chlorate of potassium if the mucous membranes are dry, and there is a scanty secretion of urine, and I never employ it in scarlet fever. The danger in these cases is, that it irritates the kidneys, and may produce desquamative nephritis. Much injury has followed its injudicious use, and many lives have been lost because physicians have regarded it as so innocuous an agent." (Scudder.)

Chlorate of potassium is diuretic, alterative, stimulant and a powerful antiseptic, especially in the puerperal condition.

Indications.—Mucous membranes bluish-white, and the coating on the tongue thick and dirty; portions of the placenta, blood-clots or membranes retained and undergoing decomposition; offensive odor from lochial discharge; breath or secretions fetid, having the odor of decomposing animal matter; cynanche maligna. Locally: Stomatitis, whether ulcerative, gangrenous or follicular; putrescence of vagina and uterus.

Dose.—1 to 5 grains.

Usual Dose.—1 to 2 grains.

Potassii Ferrocyanidum—Potassium Ferrocyanide.

In chronic diseases where there is marked irritability of the nervous system, with frequency of pulse, the ferrocyanide of potassium has been found an excellent remedy. It lessens irritation of the nervous system, and acts as a special sedative to the circulation.

"This is a remedy I value very highly, and though little used it is certain to become a favorite. We find it in market in the form of prismatic crystals of a clear lemon-yellow color, inodorous, possessed of a sweetish-bitter saline taste. If the salt is dirty, dark-colored, or parti-colored, it should be rejected. We prepare it for use by adding ℥ss to water ℥iv. Dose, one teaspoonful every three hours.

"In chronic disease of the reproductive organs in women, with hysterical manifestations, it exerts a direct and marked influence—so in hypochondriacal affections in the male.

"It exerts a decided influence upon mucous membranes. When they are pallid, lax, and give increased secretion, the prussiate of potassium may be used with advantage. It makes little difference whether of nose, throat, bronchial tubes, intestinal mucous membrane, or chronic vaginitis with leucorrhea, the influence is the same.

"This will suggest to the practitioner the cases in which it may be tested: when there is excitation, but impaired nutrition of the nerve centers, and where there is feebleness of mucous membranes with increased secretion of mucus." (Scudder.)

Ferrocyanide of potassium is sedative, diaphoretic, anodyne and astringent. In very large doses it causes giddiness and numbness, with a sense of sinking in the epigastric region.

Great care must be taken that ferrocyanide of potassium is not confounded with the deadly poison known as cyanide of potassium. The following marked distinctions should ever be borne in mind:

The ferrocyanide of potassium is in the form of yellow crystals. The cyanide of potassium is in the form of white lumps.

The ferrocyanide of potassium crystals are odorless. The cyanide of potassium lumps evolve the odor of bitter almonds.

The ferrocyanide of potassium is not classed with poisons. The cyanide of potassium is a most deadly poison.

Indications.—Palpitation, vertigo, headaches and neuralgia, especially when associated with chronic wrongs of the reproductive organs of women; weakness and instability in the heart's action; hypochondriasis, hysteria and the nervous conditions incidental to the cessation of menstruation; pallid and lax mucous membranes, with increased secretions; ovarian irritation; irritability of the nervous system.

Dose.—10 to 15 grains.

Usual Prescription.—℞ Ferrocyanide of potassium, ℥i to

℥iv; water, ℥iv. M. Sig. Dose one teaspoonful every two to four hours.

Potassii Hydroxidum—Potassium Hydroxide.

Owing to its active effect upon organic tissues, potassium hydroxide should be handled with exceeding care. It is a powerful caustic, and destroys animal and vegetable tissues. When swallowed it is a destructive poison.

Indications.—As an escharotic in cases where a deeply acting effect is desired, as in poisoned bites, glanders and anthrax; for the gradual opening of deeply seated abscesses, the destruction of condylomata, birth-marks, lupus nodules, warts, chancres, etc. The surrounding parts should be protected by adhesive plaster. In the treatment of ingrowing toe-nail, the nail may be moistened with a warmed 40 per cent. solution of this agent, whereby the upper layers are made soft and may be easily scraped off with a piece of broken glass (a steel instrument should not be used). The process may be repeated until the nail is as thin as a sheet of paper, when it can be raised by means of a pair of forceps from beneath the overlapping soft parts and cut off with scissors. A 50 per cent. solution is used in chronic skin diseases, especially in eczema, proliferations, etc. Great care should be exercised in its use.

The indications for liquor potassii hydroxidi are the same as those given for potassium hydroxide.

Potassii Iodidum—Potassium Iodide.

The iodide of potassium has long been a favorite remedy in the treatment of chronic enlargements of glands. In enlarged lymphatic glands it constitutes a medicament of curative power, and in chronic enlargement of the liver it is deemed an efficient remedial agent. In syphilis it is an acknowledged specific, and in all syphilitic affections of the nervous system it is a remedy of corrective power.

The iodide of potassium stimulates elimination of all metals, combining with them to form iodides, which are more readily eliminated. This property of the drug makes it a valuable remedy in the treatment of lead poisoning.

During the use of this agent nourishing food, and as far as

possible, animal food, should be liberally taken, and the ingestion of strong acids avoided.

Iodide of potassium is alterative and diuretic. In large doses it is an irritant. During its exhibition the patient should avoid taking cold on account of the predisposition to catarrhs of the nose, throat and bronchi which the drug causes.

Indications.—Hypertrophy of glands, with or without induration; inflammatory effusions or thickening of organs; periosteal thickening, with infiltration of neighborng tissue; paralysis, or lesions of sensibility, especially when characterized by nocturnal pain; secondary syphilis and venereal tubercles and eruptions; all forms of scrofula; articular rheumatism; lead poisoning; mammary tumors; goiter; enlargement of the liver.

Dose.—5 to 15 grains.

Usual Dose.—2 to 10 grains, largely diluted.

Potassii Nitras—Potassium Nitrate.

The nitrate of potassium possesses very energetic eliminating power, and its use promptly relieves the blood of morbific material. It is deemed an efficient remedy in rheumatism, and it is also employed with curative results in various forms of neuralgia.

In asthma this agent is administered by inhaling the smoke of burning paper which has been prepared by dipping it in a saturated solution of the salt, and afterward dried.

Nitrate of potassium is diuretic and refrigerant. In large doses it is purgative. In doses of one ounce it is a deadly poison in some cases.

Indications.—Acute and chronic articular rheumatism, when the urine is scanty, high-colored, becomes turbid on cooling from deposition of urates, or forms on cooling, after mixture with an equal bulk of nitric acid, a mass of crystals of nitrate of urea; spasmodic asthma.

Dose.—10 to 30 grains.

Usual Dose.—5 to 10 grains, largely diluted with water, every hour or two.

Potassii Permanganas—Potassium Permanganate.

A solution made in the proportion of four to fifteen grains of the drug to four ounces of water constitutes an efficient disinfectant and deodorant for foul ulcers, a good injection for

gonorrhea, and a disinfectant for the hands after dissections and post-mortem examinations. A tablespoonful of a 5 per cent. solution in half a pint of water makes a useful mouth wash and gargle after having attended patients with diphtheria, scarlet fever, or other contagious diseases. Permanganate of potassium is an antidote to the toxic effects of morphine. Dr. Moor, of New York, says that he swallowed three grains of morphine, and immediately swallowed four grains of permanganate of potassium, which prevented all poisonous effects of the morphine. In poisoning by opium, or any of its alkaloids except morphine, it is necessary to acidulate the permanganate of potassium with vinegar in the proportion of one to five. In India the permanganate of potassium is deemed an efficient remedy in cholera. The "Usual Prescription" gives the strength in which it is there used by physicians of large experience.

"We use permanganate of potassium principally as a local application where we have need of an antiseptic and stimulant. The indications for its use are, where the tissues are swollen from infiltration into connective tissue. In cases of wounds, we will notice that the edges are swollen, and the process of repair stops. The infiltration continuing, the pus becomes watery and ichorous, granulations pale and flabby; the parts separate, and finally slough. In inflammation we have very nearly the same indications for its use—the inflammation always being of a low grade, and showing infiltration of cellular tissue.

"As a topical application, it will many times arrest the progress of carbuncle, felons, and like inflammations—a strong solution being employed. In a solution of ten grains to the ounce of water, it has been used as an injection in gonorrhea, to destroy the virus; afterwards in the strength of two grains to the ounce, until the cure is complete." (Scudder.)

Permanganate of potassium in weak solutions is antiseptic, disinfectant, deodorant and stimulant. In powder or very strong solutions it is caustic. A dilute oxalic acid solution will remove the stain from the skin which is produced by this drug. Permanganates and chlorates should never be triturated with sugar, tannin, sulphur, glycerine or any other easily oxidizable substances.

Indications.—Choleraic conditions; conditions requiring increased oxidation; morphine poisoning. Locally: Foul, cancerous and other forms of ulcers; gonorrhea.

Dose.—¼ to 1 grain, dissolved in a large amount of water. It should be used only in aqueous solutions.

Usual Prescription.—℞ Permanganate of potassium, gr. ½ to gr. 1; water, ℥iv. M. Sig. Dose one teaspoonful every ten minutes to every hour.

Potassii et Sodii Tartras—Rochelle Salts.

This is a useful agent in cases attended with excessive secretions of uric acid, but should be avoided when phosphates are deposited, as the salt undergoes a partial decomposition in the system, and thus assists in forming the urinary deposit. One hundred and sixty grains of a mixture of three parts of this salt and one part of bicarbonate of sodium forms the contents of the blue paper of the ordinary seidlitz powder. The white paper contains thirty-five grains of tartaric acid.

Tartrate of potassium and sodium is a mild, cooling, laxative neutral salt.

Indications.—Excessive secretion of uric acid; conditions requiring a mild cathartic, when the stomach is sensitive, or the patient is delicate.

Dose.—½ to 1 ounce.

Usual Dose.—2 to four drachms, in water, alone or as an adjuvant to other laxatives.

Prinos Verticillatus—Black Alder.

As a stimulant to the processes of assimilation, this indigenous remedy, through its influence on the digestive tract, constitutes a most potent medicament. In chronic diarrhea and chronic dysentery it is used with much success, and in cutaneous eruptions it is a remedial agent of decided merit. The condition of ulcers and old sores rapidly improves under its influence, and it is employed in jaundice and gangrene with good results. The drug is worthy of a much more extensive investigation than it has heretofore received.

Prinos verticillatus is tonic, alterative, astringent and anthelmintic.

Indications.—Atonic conditions of the digestive tract; cutaneous eruptions; diseases attended with great weakness; sores and ulcers; chronic diarrhea and chronic dysentery.

Dose.—Fluid extract, 10 to 60 drops.

Usual Dose.—10 to 20 drops.

Prunus Virginiana—Wild Cherry.

Wild cherry allays irritation of the mucous membranes of the respiratory tract, the gastro-intestinal canal and the genito-urinary organs. In bronchial and lung affections it exerts an influence which modifies the cough, lessens the fever and increases the strength and appetite, and in atonic dyspepsia, with flatulence, it is a useful remedial agent. It is also employed with satisfactory results in diarrhea and dysentery. The conditions in which prunus is likely to prove an efficient medicament are characterized by feebleness.

Prunus virginiana is tonic, stimulant, expectorant, astringent and in large doses sedative.

Indications.—Irregular or intermittent action of the heart; heart irregularities in chronic bronchitis and anemia; convulsive action of the heart in men who are overworked; irritation of the stomach, with cough; lack of muscular tone in patients recovering from fevers and other exhausting diseases.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Prunus, gtt. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour to every three hours.

Pulsatilla Nigricans—Pulsatilla.

In the practice of specific medication one soon learns to regard pulsatilla as one of our most useful and most frequently indicated remedial agents, as the close observer of symptoms of abnormal states almost daily sees pathological conditions which cannot be well treated without the employment of this most efficient drug.

In the treatment of females, nervous wrongs characterized by morbid despondency are not infrequently brought to the attention of the physician. The patient is easily moved to tears; she moans and cries even in sleep, and still she can give no valid reason for so doing. She is constantly depressed, looks sad, and is ever expecting some cruel misfortune to descend upon her. This melancholy condition seems to have become an important part of her life. In this morbid state, pulsatilla is the remedy, and the only remedy indicated. Its judicious employment will soon convince the unfortunate one that she lives in a beautiful world, and that she has many interests in harmony with it.

Nervous headaches, especially when characterized by debility, or when accompanied by suppression of the menses and a feeling of chilliness, are speedily removed by pulsatilla, and headaches accompanied by gastric irritation or nausea and a greasy taste in the mouth, disappear soon after the exhibition of this agent. Earaches of children resulting from cold and exposure to wet weather are cured by its timely administration.

A form of indigestion which is usually caused by the excessive use of pastries and very fat articles of food, and is frequently accompanied by a greasy taste in the mouth, soon yields to the curative influence of pulsatilla. In catarrhal conditions, and especially in the second stage of acute nasal catarrh, it constitutes a most efficient medicament.

In irritation of the nervous system associated with wrongs of the reproductive organs of both sexes, pulsatilla is a very successful agent, and in amenorrhea, especially in anemic girls, as well as in suppression of the menses from cold, it is beneficially effective. In tardy or scanty menstruation its corrective power is soon manifested, and in dysmenorrhea accompanied by depression and extreme nervousness, it affords considerable relief, and when continued during the inter-menstrual period, many times results in the removal of the unpleasant condition. In leucorrhea with a milky discharge, it affords a treatment which is decidedly beneficial, and ovaritis is many times cured by its continued employment. In orchitis and gonorrheal epididymitis it effects a prompt relief, and greatly lessens the nervousness and pain. Pulsatilla increases the tone and functional activity of these organs, and overcomes irregular and deficient power. In uterine diseases, especially when characterized by despondency or hysteria, it has no equal, and in difficult, suppressed or irregular menstruation it will do much toward bringing about a normal condition. In the relaxed and atonic conditions which are sometimes apparent during pregnancy it will restore tone to the organs engaged in the process of gestation and favor a normal labor. In general nervous irritation, with a tendency to convulsive states, pulsatilla constitutes a promptly acting remedial agent, and in nervous exhaustion, when the pulse is feeble, the capillary circulation deficient and the extremities cold, together with a relaxed physical condition, it constitutes a medicament which can be employed with an assurance of beneficial

results. Pulsatilla is also a most useful remedy when there are leucorrheal discharges, attended with pain in the loins, tenesmus, irregularities, short, shooting pains, burning, weariness, loss of appetite and general derangement of the nervous system. In gonorrheal orchitis it constitutes an excellent remedy to combine with phytolacca, both for external and internal use.

Pulsatilla is more especially indicated in the absence of acute inflammation, determination of blood and high fever, but if the specific indications are marked their presence may be disregarded.

"The principal use of pulsatilla is to relieve certain cerebral symptoms with difficulty relieved by other remedies. In some diseases of women, in spermatorrhea and prostatorrhea, in heart disease, and some other chronic affections, we find certain *head* symptoms playing an important part, and giving a good deal of trouble. The patient is nervous, restless, has an active imagination for disease, a fear of impending danger, etc. These symptoms are very unpleasant, and not unfrequently prevent the curative action of remedies. Pulsatilla reaches them and gives prompt and certain relief.

"I would not treat some cases of spermatorrhea without I could employ this remedy. For with the unnatural excitement of the mind, no remedy would exert a curative influence. So in some cases of heart disease, the head symptoms are the most prominent and unpleasant features. Relieve the unpleasant mental sensations and dread of danger, and we have removed a permanent cause of excitement.

"Though pulsatilla is the remedy for nervousness, it must not be given with any expectation of benefit where the excitement depends upon irritation and determination of blood. In this case it will either exert no influence or it will be unfavorable.

"The pulsatilla exerts a marked influence upon the reproductive organs of both male and female. I regard it as decidedly the best emmenagogue, when the suppression is not the result of or attended by irritation and determination of blood; where there is simple suppression from atony or nervous shock, it may be used with confidence. In male or female it lessens sexual excitement. It does not diminish sexual power, but rather strengthens it by lessening morbid excitement." (Scudder.)

"Taken internally in overdoses, pulsatilla acts as a gastric irritant, producing a sense of rawness and burning pain in the stomach, with endeavors to vomit, all accompanied with marked prostration. A sense of constriction and tightness of the chest, with chilliness, marked weakness, and some congestion, has been produced by large doses. Full doses depress the action of the heart, lower arterial tension, and reduce temperature. Sensory and

motor paralyses have followed large doses of pulsatilla, while toxic doses may produce mydriasis, stupor, coma, and convulsions. In medicinal doses, pulsatilla increases the power and regulates the action of the heart, and gives a better character to the pulse rate, particularly slowing the irritable, rapid and feeble pulse due to nervous depression. It improves the sympathetic system and cerebral functions, and especially strengthens sympathetic innervation, this action being very marked in troubles of the reproductive organs of male and female.

"Pulsatilla is a remedy of wide applicability, but more particularly for those conditions in which the mind is a prominent factor. A gloomy mentality, a state of nerve depression and unrest, a disposition to brood over real or imagined trouble, a tendency to look on the dark side of life, sadness, mild restlessness, and a state of mental unrest generally denominated in broad terms 'nervousness,' are factors in the condition of the patient requiring pulsatilla. A pulsatilla patient weeps easily, and the mind is inclined to wander—to be unsettled. The pulse requiring pulsatilla is weak, soft and open, and the tissues have a tendency to dryness (except when the mucous tissues are discharging a thick, bland material), and about the orbits the parts appear contracted, sunken and dark in color. The whole countenance and movements of the body depict sadness, moroseness, despondency and lack of tone. Hysteria of the mild and weeping form may be a symptom. The whole condition is one of nervous depression, the nutrition of the nerve centers is at fault. With such symptoms pulsatilla may be confidently prescribed.

"The long-continued use of pulsatilla as an intercurrent remedy is accredited with curative efforts in uterine colic, but it is of no value during an attack. Pulsatilla frequently proves a good remedy in ovaritis and ovaralgia with tensive, tearing pain. Sluggish, ineffectual and weak labor-pains are sometimes remedied by this drug. It is frequently a remedy for pain when dependent on or associated with debility, and sometimes when due to acute inflammation. It is a leading remedy in epididymitis and orchitis, whether due to gonorrheal infection or to metastasis from mumps. The dark-red, congested, enlarged and sensitive testicle indicates it. It relieves the pains of orchialgia, and subdues mammary swelling from the metastasis of mumps. Pulsatilla increases sexual power, but lessens morbid sexual excitement. It is especially valuable in relieving urethral irritation and consequent spermatorrhea and prostatorrhea. In these troubles it overcomes the nervous apprehensions so frequently a troublesome feature. It also alleviates the nervous irritability accompanying or produced by varicocele. In gonorrhea, particularly of the chronic type, pulsatilla is of value when the urethral membrane is swollen. Pulsatilla has been used by some for the relief of hydrocele, but for this affection we possess bet-

ter remedies. Many unpleasant conditions of the urinary apparatus are relieved by pulsatilla, as frequent but ineffectual attempts at urination, the bladder giving a sensation as if bloated; dribbling urine from movement, the dysuria of pregnancy, and in involuntary micturition from colds or from nervous debility.

"Pulsatilla frequently proves a useful remedy in headache of various types. It relieves the frontal headache from nasal catarrh, nervous headache, particularly when due to gastric disturbances, with greasy taste; menstrual headache, with chilliness and suppressed menses; bilious and gastric headaches of a dull and heavy character, with greasy taste and nausea, and headaches due to uterine irregularities or to a rheumatic diathesis. These headaches are all of anemic character—the opposite of those relieved by gelsemium. Though ordinarily not a remedy for acute inflammations (contraindicated in gastro-intestinal inflammation), there are some conditions where small doses of pulsatilla are beneficial when the usual symptoms calling for the drug are present. These conditions are acute inflammation of the nose, fauces, larynx or bronchi. It is especially effective in the secondary stage of acute nasal catarrh, when the nasopharynx is affected and there is a sense of rawness and moisture, and an abundant discharge of thick, yellow, bland, inoffensive mucus or muco-pus. Pulsatilla frequently serves a good purpose in asthma, superinduced by pregnancy or by suppressed menses, and it favorably influences whooping-cough in properly selected cases. So-called 'stomach cough' is frequently cured by pulsatilla.

"Pulsatilla should be remembered as a remedy of much value to control the catarrhal symptoms of the exanthemata; it also controls the irritability frequently accompanying these disorders. In measles it has done good service in checking the coryza and profuse lachrymation, as well as the dry, tight, painful cough, and when retrocession of the eruption has taken place it has reversed this unpleasant condition. It relieves the irritable condition in varicella. Pulsatilla is very efficient in real and imaginary cardiac affections. It has proved useful in cardiac hypertrophy and in dilatation of the venous heart. It is especially effective in functional heart disorders with giddiness, imperfect voluntary motion, impaired vision, and with a symptom described as a sense of pressure over the larynx and trachea, with imperfect respiratory movement and sense of impending danger." (Felter.)

Pulsatilla nigricans is nervine, sedative, emmenagogue and alterative.

Indications.—Irritation of the nervous system, associated with wrongs of the reproductive organs of both men and women; menses scanty or tardy; sense of fullness and weakness in the

back and hips of women; nervousness, despondency and fear of impending danger; conditions in which the patient is frequently moved to tears (even in sleep in extreme cases), and still she is unable to give any sufficient reason for doing so; nervousness with sleeplessness; head symptoms common to functional affections of the reproductive organs of both men and women; nervous conditions caused by mental over-exertion or the excessive use of tobacco.

Dose.—Fluid extract, 1 to 5 drops; specific medicine, 1-10 to 5 drops.

Usual Prescription.—℞ Pulsatilla, gtt. x to xxx; water, ℥iv. M. Sig. Dose one teaspoonful every hour to every three hours.

Punica Granatum—Pomegranate.

Pomegranate is among the most commonly employed remedies for the removal of tapeworm (tenia). For this purpose a decoction may be made by placing two ounces of the bark in a pint and a half of cold water, macerating over night, boiling down to one pint and straining. From two to four ounces of the decoction should be administered every half-hour or hour until one pint has been taken. Sometimes it is necessary to repeat the doses several mornings before they take effect, and it is well to repeat them occasionally for four or five days after the joints have ceased to come away. Laxatives should also be given from time to time. For twenty-four hours previous to taking the medicine the patient should be kept on a low diet.

Punica granatum is anthelmintic.

Indications.—Symptoms of tapeworm; chronic mucous discharges; passive hemorrhages; aphthous conditions of the mouth; night sweats; colliquative diarrhea.

Dose.—Fluid extract, 30 drops to 2 drachms; decoction, 2 to 4 ounces, every half-hour or hour until a pint has been taken.

Quercus Alba—White Oak.

White oak is employed in dysentery, and it has proved curative in many cases of epidemic dysentery after the failure of other approved remedies. In acute and chronic diarrhea it is also an efficient drug. Its general action is much like that of tannic acid. It is of value as an ointment in hemorrhoids, pro-

lapsus ani, anal fissure and leucorrhea. It is, however, objectionable in some cases, on account of its staining the clothing.

Quercus alba is astringent and tonic.

Indications.—Acute and chronic diarrhea; profuse night-sweats; relaxed mucous membranes with profuse discharges; passive hemorrhage; relaxed uvula; bleeding hemorrhoids; leucorrhea, menorrhagia and hemoptysis; dysentery.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Dose.—10 to 15 drops.

Quininæ Sulphas—Quinine Sulphate.

Quinine is one of the most powerful antiperiodics, and it is of value in many diseased conditions in which periodicity is a prominent feature. Malarial fevers, in all their varied forms, usually yield to the proper use of quinine, and in many cases it seems to act as a prophylactic. It is extensively employed, and when clearly indicated it is a very certain remedial agent. It should not be used in large doses unless periodicity is a marked feature of the case being treated. In very small doses it is useful in states of atony and depression. It is especially valuable in cases of prolonged suppuration, such as pulmonary phthisis, fistulous discharges, septicemia and pyemia. As a tonic and restorative during the course of febrile diseases, as well as in convalescence, quinine is highly efficient.

Quinine may be used endermically, and for this purpose one drachm of the powder rubbed up with two drachms of lard or vaseline, and freely applied to the axilla, groin and abdomen, will act well. This method of using the drug is especially adapted to the treatment of small children.

Quinine is contraindicated in acute inflammations of the genito-urinary and gastro-intestinal tract, in acute or subacute inflammation of the middle ear, and in meningitis and cerebritis.

"I have taught for years, that if we are to expect the kindly and curative action of quinine, the stomach must be in condition to receive and absorb it, and the system in condition for its action. If we have a proper condition in these respects, we will hear nothing of roaring in the ears, vertigo, etc., but its action will be most kindly. The rule is very simple: *Given a soft and open pulse, a moist skin, moist and cleaning tongue,* and quinine will act kindly, antidote the malarial poison, or in small doses

improve innervation. Always get this condition before prescribing the remedy and you will never be disappointed in its action.

"As an antiperiodic, I believe in prescribing *single* doses. Put the stomach in proper condition, regulate the circulation, establish secretion, and then give *one* full dose of the remedy (10 to 15 grains). The best form of the remedy is in solution with one or two ounces of water, using a sufficient quantity of sulphuric acid.

"This is not only the most certain method of administration, but I think it will be found the most pleasant.

"It is hardly necessary to impress upon the reader the necessity of determining the periodic element in disease. Whilst we may not know what it is, or how quinine antidotes it, we know that its removal cures, or at least paves the way to a cure.

"But quinine is not *specific* to all agues. We see it given day after day, week after week, in many cases, without any advantage; but, on the contrary, it excites the nervous and vascular systems, and at last produces a chronic erythism of them, that is correctly named 'the quinine disease.' From this, recovery is far more difficult than from the malarial affection.

"Is it possible, then, to determine the cases in which quinine will prove specific and the cases in which it will fail? I think it is. It antidotes the malarial poison only when kindly received and absorbed, and when the system is in such condition that it can be readily excreted. Given the conditions of pulse, skin and tongue, that we have already named, and its action is as certain as could be desired.

"In some cases, the general treatment directed to obtaining normal activity of the various functions is the most successful. In other cases nux vomica or strychnia is preferable. In others, minute doses of arsenic antagonize the malarial poison; whilst in some rare cases I have treated the disease most successfully with aconite and belladonna.

"As a stimulant to the cerebro-spinal centers, its use is very important. In many forms of disease, especially in the advanced stages, we find an impaired innervation, preventing functional activity, or its restoration and continuance by the use of remedies. It is essential to success that innervation be increased, not temporarily by the use of stimulants, but somewhat permanently. This we accomplish by the administration of small doses of quinine (gr. ½ to grs. 2). Even here we find it necessary to observe the rules for its administration already noticed—the patient must be prepared for its use.

"It favorably influences the nutrition of the nerve centers, and hence is employed in the treatment of chronic disease with enfeebled innervation, with marked advantage. There are two classes of chronic disease in which it is useful—the one in which there is a malarial influence, with obscure periodicity, and the other the enfeebled innervation, as named above.

"Its general and stomachic influence (when obtained) is most certainly from its action upon the nervous system—the influence extending to the sympathetic ganglia as well as to the cerebro-spinal centers. In some cases this action is very important, improving digestion and blood-making, and nutrition, as well as waste and excretion—aiding the renewal of life." (Scudder.)

"From a practical point of view it is fairly well established that at certain phases of development the malarial parasite offers less resistance to the action of quinine than at others. Thus, in the early stages of the parasite's development, particularly while in the blood-cell, the resistance to quinine is very marked; parasitic forms which are free, swimming in the blood serum, offer less resistance. The best results are obtained from quinine when administered during the stage of fever, or in the period immediately preceding. Early doses of quinine check the development of the second stage, and prevent, in part at least, the segmentation of the parasite. The practical point to be gained from recent studies is that quinine given in the period preceding the fever and during fever is the most effective in the cure of the non-pernicious type of the disease. As it takes from two to four hours for quinine to saturate the plasma, this amount of time should be allowed, and a dose of 10 to 15 grains given two or three hours before the chill, which is thought to record the breaking free of the parasites from the red blood-cells." (Butler.)

The sulphate of quinine is febrifuge, tonic, stimulant, antiseptic and antiperiodic.

Indications.—Periodicity, when the tongue is clean or cleaning, the pulse soft, the skin not dry, and the nervous system free from severe irritation.

Dose.—1 to 20 grains.

Usual Dose.—½ to 2 grains.

Resorcinum—Resorcin.

Externally this agent is employed in 1 to 10 per cent. solutions, or in 10 to 40 per cent. ointments or pastes. In erysipelas a 25 per cent. ointment with vaseline has been recommended. In a 3 per cent. solution it is used for washing out the urethra, bladder, vagina, stomach and rectum. It is also employed as a disinfectant for surgical instruments, which it neither dulls nor rusts. A 1 per cent. solution is used as an antiseptic spray in affections of the respiratory surfaces. Applied in crystals, it is a mild and painless caustic.

The internal use of this drug is not here recommended, on ac-

count of its liability to produce toxic effects, such as vertigo, somnolence, diaphoresis, chills and other unpleasant conditions.

Resorcin is antiseptic, disinfectant and caustic.

Indications.—Locally: Various cutaneous affections, such as acne, chronic eczema, eczema marginatum, seborrhea, psoriasis and pityriasis.

Rhamnus Californica—Wild Coffee Tree.

Rhamnus californica is employed with advantage in all abnormal conditions in which the rheumatic diathesis is apparent. In acute and chronic articular and muscular rheumatism it is often used with gratifying results, and in various forms of inflammatory rheumatism it is deemed an efficient remedy. It also constitutes a medicament of curative power in all affections characterized by muscular pain without tenderness.

"Comparing the action of this remedy with that of our best agents in rheumatism and rheumatoid pain, such as cimicifuga, caulophyllum, salicylate of sodium, etc., I am impressed with its great superiority over them all. Muscular pain is a condition—or symptom—that is very common, and a successful agent for its relief is a great desideratum, notwithstanding the fact that we have a goodly list of this class of remedies already. I have used this remedy where it disappointed me, but the cases have been few where it has failed if the diagnosis was well made. During our recent little epidemic of influenza, in which a leading feature was a sudden attack of severe muscular pain in the beginning, it proved the most acceptable remedy I tried.

"I am hardly able to draw a comparison between this drug and jaborandi, which I consider a superior remedy for the treatment of acute rheumatism. Rhamnus californica is an excellent remedy for both the acute and chronic forms, without doubt, while it is only in cases of recent development that we can expect marked benefit from jaborandi. The sedative action of jaborandi would commend it in cases in which there was a high temperature, though even here there is no reason that rhamnus might not succeed. As an all-round remedy rhamnus will, I am very certain, be found the most satisfactory.

"I administer rhamnus californica in two forms. I think the preferable one, where the bark is plenty, is to prepare a decoction by pouring a pint of cold water over a heaping tablespoonful of the bark, and allowing it to heat, and steeping for ten or fifteen minutes over a slow fire. Dregs and all are then to be poured into an earthen bowl; a wineglassful being the dose in severe cases, repeated every two or three hours until action of the bowels

results. Afterward a tablespoonful should be given every three or four hours. I find, however, that fifteen drops of a saturated tincture, prepared by covering the bark with alcohol, produces as good effect, though it is bitter when compared with the decoction. Where the bark is high-priced or difficult to obtain, the tincture will be a saving, as the crude article may be covered three times with alcohol, and yield a good tincture every time.

"The object in administering the drug in full doses until its cathartic effects are obtained, is not because it is supposed by myself that the cathartic effect is particularly beneficial, but to certify that the full drug effect is obtained. The idea that cathartics do any good, as such, must remain the property of the old fogies that originated it, and the prodders who believe in the good old ways of the grandfathers—those who believe one thing when they study physiology and another when they practice therapeutics." (Webster.)

Rhamnus californica is cathartic and antirheumatic.

Indications.—Abnormal conditions influenced by a rheumatic diathesis; muscular pain without tenderness of the part involved; acute and chronic rheumatism.

Dose.—Saturated tincture, 10 to 15 drops; decoction, 1 to 2 ounces.

Rhamnus Purshiana—Cascara Sagrada.

Cascara sagrada usually constitutes an efficient remedy in constipation, especially when the abnormal condition is due to torpor of the colon, although in some persons it seems to have but little effect. When employed for constipation it should be administered in small and frequently repeated doses, and the frequency then gradually lessened until natural functional activity of the bowels has been restored. It is more efficient when taken upon an empty stomach and in a diluted form. Cascara sagrada has been employed as a tonic to the entire intestinal tract with advantage, and in some cases of dyspepsia it has been used with gratifying results. In gastric, duodenal and biliary catarrh, with jaundice, it is deemed a remedial agent of usefulness, and in some forms of rheumatism it has given good results. It is also a remedy of some value in sick headaches, and in hemorrhoids it exerts a relieving influence.

Rhamnus purshiana is tonic, laxative and stomachic.

Indications.—Habitual constipation due to torpor of the colon; hemorrhoids; atonic condition of the intestines.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—5 to 30 drops every two hours, in a little water, the dose to be gradually reduced after the action of the drug begins.

Rheum Palmatum—Rhubarb.

Rhubarb in very small doses, frequently repeated, is a most excellent remedy in vomiting caused by irritation of the stomach. It is also useful in nervous irritability which is manifested by restlessness and convulsive contraction of muscles.

"In small doses rhubarb will prove an excellent tonic, strengthening the functions of both stomach and intestines, giving improved digestion. In indigestion, with some diarrhea, of a papescent character, it will be found a good remedy.

"In some cases it will prove our best remedy in the treatment of obstinate constipation. The cases are those in which there is an unnatural sensation of constriction in stomach and bowels, and contraction of the abdominal muscles. I prescribe it in these cases in doses of ten drops to a large glass of water, on rising in the morning. In the severer cases it is associated with thorough fatty inunction over the abdomen, and friction.

"I employ it as a restorative, where there is special need of increased nutrition of nerve tisue. It is thus associated with the preparations of phosphorus, and with cod-liver oil." (Scudder.)

"The root of this plant is a valuable and singular cathartic, differing from all others of the materia medica. It operates, first, by evacuating the intestinal canal, and then gently astringing or restoring the tone of it. Upon these singular properties combined (purgative and astringent) depend its utility in dysentery and diarrhea. I have often been astonished that this valuable plant should be neglected by physicians, particularly in bowel complaints." (Wooster Beach.)

Rheum palmatum is tonic, astringent, cathartic and carminative. In small doses it is constipating by reason of the tannic acid which it contains, and stomachic through a bitter principle. In large doses it is laxative in consequence of the cathartic acid which is one of its chief constituents.

Indications.—Irritation of the stomach, with nausea and vomiting; tongue elongated and reddened at tip and edges; diarrhea, when the abdomen gives evidence of tenderness on pressure; scur-smelling discharges from the bowels; weak digestion and

dyspepsia, with tendency to diarrhea, especially in children; jaundice, especially when the digestive power is weak.

Dose.—Fluid extract, 1 to 20 drops; specific medicine, 1 to 20 drops; syrup, 30 drops to 2 drachms.

Usual Prescription.—℞ Rheum, gtt. x to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every half-hour to every two hours.

Rhus Aromatica—Fragrant Sumach.

Fragrant sumach is deemed a good remedy in diabetes, and in hemorrhage from the kidneys, uterus, bowels, stomach or lungs it is highly recommended. It is also an efficient remedy in all cases of excessive activity of the urinary organs when there is no inflammation. It should not be used when there is active inflammation, and it is contraindicated in acute cases. In phthisis it exerts a favorable influence over the hemorrhage, diarrhea and night-sweats. Glycerine, mucilage and sugar constitute good vehicles in which to exhibit the agent.

"Some months ago I was called to see a lady suffering from diabetes. The following was her condition: Skin sallow, eyes sunken, pulse feeble and quick, temperature 100.5°, loss of flesh, slight cough, and sometimes night-sweats, appetite variable, sometimes ravenous and sometimes not so good; thirst, more or less, all the time; bowels sometimes constipated and sometimes the contrary condition was present; there was also a general sense of lassitude and languor. The history of the case revealed the fact that several months previously her attention was first attracted by frequent calls to urinate, and that she was compelled to get up at night to void large quantities of urine; this condition of things had been steadily increasing, until she was compelled to abandon her ordinary household duties. Under the usual tests the urine revealed a large saccharine deposit, specific gravity 1031. I left an ounce vial of a saturated tincture of rhus aromatica, and ordered her to take ten drops every four hours, and report in a week. At the expiration of that time her husband reported that the amount of urine voided was greatly diminished, and that she appeared greatly improved in every respect, except she was troubled with considerable pain and soreness over region of kidneys; in addition I gave him a box of irritating plaster, which I ordered prepared, and to be worn over kidneys until the desired result was obtained; no other medicine was necessary, the dose of rhus aromatica being varied from time to time as necessity required; this, together with proper bathing, clothing, exercise, and above all, proper diet, carefully avoiding anything that favored the sugar-forming processes in the body, completed treat-

ment. At the expiration of four months my patient was enjoying reasonable health and has remained so to the present.

"*Enuresis,* arising either from atony of the muscular or irritation of nervous fibers, will be promptly met by the rhus aromatica. I have relieved many cases in which the patient was unable to restrain the urine to normal distension of the bladder, and others who were unable to prevent constant dribbling of the urine, which rendered them filthy and disagreeable, not only to themselves but to those around them, virtually debarring them from society. And if there is a specific for that troublesome condition which we so often meet in children, that of 'bed-wetting,' we certainly have it in rhus aromatica." (McClanahan.)

Rhus aromatica is astringent, stimulant and diuretic.

Indications.—Diabetes, when the urine is pale-colored, of high specific gravity, with sugar in it, and the patient debilitated; diarrhea, with profuse and painful discharges, mucous and hemorrhagic, from the mucous surfaces of the kidneys, bladder, gastro-intestinal canal, uterus, lungs and bronchi; incipient albuminuria; hypertrophy of the prostate, with great pain during micturition; enuresis of children and aged persons; chills, thirst and constipation, with sugar in the urine; chronic diabetes, when no sugar is found in the urine and a large quantity of urine is passed, and there is great thirst; chronic catarrh of the bladder and chronic cystitis; chronic diarrhea and dysentery.

Dose.—Fluid extract, 5 to 30 drops, every three or four hours; specific medicine, 5 to 30 drops, every three or four hours.

Usual Prescription.—℞ Rhus aromatica, ʒss to ʒi; glycerine, ʒiv. M. Sig. Dose one teaspoonful every hour or two.

Rhus Glabrum—Upland Sumach.

Sumach exerts a direct influence upon the processes of waste and repair. In some cases of protracted dysentery and diarrhea, with debilitated mucous surfaces, it has been used with advantage. It has also been found useful in atonic ulceration of the stomach and intestinal canal, as well as in all affections in which a relaxed condition of mucous membranes was a prominent feature.

Rhus glabrum is diuretic, antiseptic, refrigerant, tonic and astringent.

Indications.—Putrescence of excretions, with tendency to ulceration, as in typhus and typhoid fevers; diarrhea, dysentery

and leucorrhea. Locally: As a gargle or local application to soft, spongy gums, aphthæ and pharyngitis.

Dose.—Fluid extract, 1 to 15 drops; specific medicine, 1 to 15 drops.

Usual Dose.—1 to 10 drops.

Rhus Toxicodendron—Poison Oak.

This remedy, commonly known as poison ivy and poison oak, occupies a place second to but few drugs in importance as a remedy for the mediine case. Its primary action is believed to be upon the facial sheath of the nerves, tendons, and the fibrous and cutaneous tissues. It is, therefore, upon the wrongs of these structures that the drug exerts its most markedly curative influence.

Rhus toxicodendron should never be neglected in any case presenting symptoms of nervous unrest. Its beneficial power over the nervous system has long been recognized and in numerous ways demonstrated beyond a peradventure. In fevers and inflammations it often constitutes a medicament of great usefulness. In typhoid fever, especially when the tongue is dry, elongated and irritable, with prominent papillæ, and there is a tendency to delirium, rhus is a most useful remedial agent. In spinal meningitis it has been frequently employed, and when exhibited in accordance with its specific indications has given satisfactory results. In rheumatism, especially when burning heat, redness and great restlessness are prominent features of the case, this drug constitutes one of our most valuable remedial agents, and in rheumatic inflammation of the sheath of the sciatic nerve it is as positively curative as it is possible for a drug to be. Erysipelas comes within the range of its curative power, and the specific indications for its administration in this disease are often unmistakably manifested.

In many cases of simple fever in children rhus toxicodendron is an essential remedy. The child has a high temperature, the pulse is quick, it sleeps but a short time, starts out of sleep as if frightened and utters a shrill cry. Such a case will yield promptly to this agent, and if the eyes are unnaturally bright the addition of gelsemium to the prescription will aid much toward restoring the patient to health.

"The indications for rhus may be briefly summed up as follows: Sharp pain in frontal region, especially in left orbit, sharp

stroke of pulse; tip of tongue showing small red points on upper surface; local pain sharp and burning; burning pain of surface; bright redness of surface. With such indications it may be administered in any form of disease with a certainty of benefit.

"The rhus has proven one of our most valuable medicines, and will be highly prized by every practitioner when its use is learned. It is antidotal to such animal poisons (zymotic) as determine to the skin, in erysipelas or erysipeloid disease, or in low grades of inflammation of cellular tissue, or in low grades of inflammation of mucous membranes. A frequent, small pulse, redness of mucous membranes, brown sordes, bright superficial redness of skin, tympanites, acrid discharges from bowels or bladder are indications for its use. So also is inflammatory action, presenting tumid, bright reddened tissues, deep-seated or superficial burning pain, inflammation giving an ichorous discharge, in which the tissues seem to melt away without sloughing. Old ulcers that present reddened, glistening edges, scrofulous or syphilitic disease, with tumid-red, glistening swellings.

"I have preferred to thus point out distinctly the indications for the use of the rhus, without reference to the disease, according to our present nomenclature. It will be seen to point to erysipelas, typhoid fever and typhoid disease in general, and the entire list of zymotic diseases." (Scudder.)

Rhus toxicodendron is diuretic, diaphoretic, laxative and stimulant to the nervous system. In large doses it is a powerful irritant. When externally applied it produces, in most persons, swelling and severe vesication.

Indications.—Bright flushing of the surface; burning sensations, especially in the urinary and genital passages; nervous excitement causing children to start up in a frightened manner from sleep; bright-red flush of the left cheek; pains in the frontal region and orbits, which are most severe on the left side, especially when giving a burning sensation; pains in the back and thighs, accompanied by a burning sensation and sometimes numbness in the parts; pains in the lumbar and sacral regions, extending down the thighs, and accompanied by a sense of burning in the parts; diarrhea of typhoid fever, when the tongue has red spots on the upper surface of its tip; erysipelas, when the part affected shows vivid redness, vesicles form, there is burning pain, and the pulse is small and sharp. The most marked indication for rhus toxicodendron is a long, pointed tongue with prominent papillæ, associated with burning heat, redness and great restlessness.

Dose.—Fluid extract, 1 to 2 drops; specific medicine, ½ to 2 drops.

Usual Prescription.—℞ Rhus toxicodendron, gtt. v to x; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Rubus Villosus—Blackberry.

Blackberry possesses well-marked astringent and tonic properties, and is frequently employed in diarrhea with corrective results. It is especially indicated when there is evidence of relaxtion and enfeeblement of the mucous coats of the stomach and bowels, and the discharges are large, watery and clay-colored. It is also a useful remedy in some cases of cholera infantum and dysentery.

Rubus villosus is tonic and astringent.

Indications.—Atonic conditions of the gastro-intestinal tract, accompanied by excessive discharges; passive hemorrhage from the stomach, bowels or uterus.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 30 drops.

Usual Dose.—5 to 10 drops in water, every two to four hours.

Rumex Crispus—Yellow Dock.

The general action of yellow dock is to increase waste and nutrition. It is employed with great advantage in various forms of anemia, and is of special value in anemias of young persons. It is especially adapted to cases of anemia in which there is impaired digestion. It increases the appetite and favors normal activity of the nutritive processes. It is also an efficient remedy in anemia associated with neurasthenia and rheumatism. In dyspeptic conditions characterized by burning sensations in the stomach it is deemed a remedy of corrective power, and in chlorosis and chloranemia of tuberculosis it has often proved useful. Melancholia dependent upon anemia of the brain is also beneficially influenced by this agent. Rumex is successfully employed in diseases of the skin, and is especially valuable in cases in which there is evidence of bad blood. It is also used with advantage in affections of the larynx, trachea and bronchi.

"In diarrhea and dysentery rumex is a remedy of very great value. It has cured exceedingly persistent cases of exhaustive morning diarrhea with the following symptoms, viz.: Evacua-

tions scanty, bloody, oftentimes offensive, colicky pains before and after stool, sinking at the stomach, fetid breath, sweat and urine; the discharges being very frequent between early morning and midday. In the asthenic forms of intestinal wrongs, and in the diarrhea of phthisis, it affects the bowels, sensibly reacting as a mild astringent not unlike rhubarb. It is especially serviceable in the dysentery of aged persons, and has been used successfully in apparently hopeless cases.

"In early congestive albuminuria this remedy will be found capable of repairing the mischief and restoring the apparatus to its normal action, restoring tonicity to the parenchyma of the kidneys and the uropoietic tubules.

"Rumex will be found valuable in those irregularities of menstrual function which are dependent on anemia of the ovaries, amenorrhea, or vicarious menstruation, etc., being particularly useful in cases of anemia occurring in the young female, especially at the age of puberty, when the nervous symptoms predominate—they are fractious and irritable, and sleep does not seem to give the needed recuperation. Rumex here meets the general anemia, and when combined with the *special* indicated remedy—helonias, senecio, pulsatilla, avena, phosphorus, strychnia, quinia, or achillea—will produce happy results.

"Rumex is of great service when the throat is swollen, sensitive and dark red, with little pain in proportion, or else entire absence of pain. The nursing sore mouth and ulceration of the buccal mucous membrane both come under the domain of rumex influence." (Forbush.)

Rumex crispus is alterative, mildly astringent, tonic, detergent, and, in large doses, laxative.

Indications.—Chronic diseases of the skin; asthenic forms of diarrhea and dysentery; diarrhea of phthisis; scrofula and syphilis; coughs, accompanied by increased sensibility of the mucous membrane of the bronchi, trachea or larynx; feeling of irritation behind the sternum, accompanied by a cough which is increased by cold air and at night; irregular menstruation.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Dose.—10 to 20 drops.

Sabal Serrulata—Saw Palmetto.

Saw palmetto relieves irritability of the entire nervous system, stimulates digestion, improves the appetite and aids assimilation, and thus becomes a useful medicament in a wide range of abnormal states. In diseases characterized by irritation of

the nose, throat and larynx, it has been extensively employed with marked advantage, and in various catarrhal affections it has often proved serviceable. It exerts a sedative influence in irritable conditions of the reproductive organs, and at the same time acts as a nutritive tonic to them. It undoubtedly favors normal functional activity of the reproductive system through its power to reinvigorate and balance the entire nervous system, but that it will, as has been claimed by some writers, restore the waning sexual power of the middle-aged has not been clearly demonstrated to the mind of the writer. It has been employed with some success in atrophy of the prostate gland, but in view of its enlarging influence upon other glands of the sexual system, it does not seem probable that it can exert the great reducing action upon the prostate claimed for it by some authors. As one writer has tersely remarked: "Looking at all of these things as we do, we cannot explain why saw palmetto should increase the size of the mammæ, the testes, the reproductive organs generally, and specifically reduce the size of the prostate, and we do not believe that it does."

"Saw palmetto is said to act as a special tonic, sedative and expectorant to the mucous membrane of the respiratory apparatus. Besides these, it exerts a special vitalizing action upon the reproductive organs of both the male and female. It increases the functional activity of the whole reproductive system. As far as our own observations go, we are not prepared to say whether these effects are due to its general tonic effects, or whether it has a special or specific action upon these parts or organs. We are positive that it is an active remedy, and we believe that the future will single out for us the exact cases in which it will prove beneficial. Like other remedies, it will not cure everybody.

"From the fact of its being a general tonic, saw palmetto may be hopefully prescribed in any depraved condition. Its special tonic and expectorant action on the respiratory mucous membrane makes it a valuable remedy in phthisis, in tuberculous laryngitis, in acute and chronic laryngitis, in bronchitis, in asthma, in whooping-cough, and in cough generally when due to irritation of the respiratory mucous membrane. It is also highly recommended as a special remedy in catarrh—both acute and chronic. In these cases an inhalation of the vapor of saw palmetto is beneficial and not unpleasant.

The saw palmetto, on account of its tonic effects, together with its special diuretic action, becomes an efficient remedy in many urinary troubles. In this respect it is said to be the friend of the old man—the most positive remedy we possess for the relief

of some of the difficulties that beset the declining years of about four-fifths of our old men. We are not sure why it is so valuable in these cases. Many of these are attributed to an enlarged prostate, and when improvement follows the administration of saw palmetto, it is said to have reduced the size of the prostate gland. Of such action *we* are not positive. An enlarged prostate, together with the lessened muscular force due to age or debility, prevents a complete emptying of the bladder. The residual urine becomes stale, decomposed, and vesical irritation follows, and with it a number of distressing symptoms. Now, we believe that the tonic effect of the saw palmetto increases the powers of contraction of the muscular fibers of the bladder, so that there is less sagging down behind the prostate. The bladder is consequently more completely emptied, and through this and the tonic action of the drug vesical irritation and tenesmus are relieved. In short, it is through its general tonic effect, rather than through a specific action in reducing the size of the prostate." (Bloyer.)

Sabal serrulata is sedative, diuretic, tonic and nutrient.

Indications.—Functional inactivity of the reproductive system of both male and female; atrophy of the prostate, mammæ, uterus or testes; chronic laryngitis, chronic pharyngitis and chronic bronchitis; feebleness of the urinary organs; acute and chronic catarrh.

Dose.—Fluid extract, 10 drops to 2 drachms; specific medicine, 10 drops to 2 drachms.

Usual Dose.—10 to 30 drops, in water, three times a day.

Salicinum—Salicin.

Salicin improves the tone of the gastro-intestinal tract and the glandular organs. It is employed with advantage in all diseases in which there is evidence of an impaired condition of mucous membranes. It is, therefore, a useful medicament in bronchorrhea, gastric catarrh, catarrhal diarrhea and leucorrhea. It is also deemed a remedy of corrective power in passive hemorrhage, and in rheumatism it is employed with good success.

Salicin is tonic, antipyretic, antiperiodic and antirheumatic.

Indications.—Periodicity; intermittent and remittent fevers; rheumatism, especially when there is evidence of periodicity; dyspepsia; diarrhea.

Dose.—1 to 24 grains, up to 2 drachms a day.

Usual Dose.— 2 to 8 grains.

Salix Nigra—Black Willow.

Black willow has been employed with excellent results in almost all forms of excitement of the genital organs. In satyriasis, erotomania and nymphomania, it is said to exert a controlling influence, especially when these abnormal conditions are caused by local irritation. In spermatorrhea, when dependent upon local wrongs, its use relieves the affection and quiets the general nervous system. It is also employed with marked advantage in ovarian irritation and ovarian congestion, as well as in ovarian neuralgia and hyperesthesia. In many cases of hysteria its administration overcomes the extreme excitability and nervousness.

"There is a class of cases in which the salix is a very decided antiperiodic, and if these can be distinguished, the remedy will be valuable. I believe it is in those in which there is increased secretion from mucous membranes, and especially where there is the septic tendency, marked by fetid discharges, foul tongue, etc. In typhoid disease it may be employed both as a tonic and antiseptic, using the smaller dose named." (Scudder.)

Salix nigra is a powerful sexual sedative, tonic, antiperiodic and astringent.

Indications.—Inflammation of the bladder, ovaries and prostate gland; an irritable condition of the genito-urinary organs of either sex; nocturnal emissions; excessive sexual desire of either sex; spermatorrhea; increased secretion from mucous membranes; fetid discharges.

Dose.—Fluid extract, 10 to 60 drops; specific medicine, 10 to 60 drops.

Usual Dose.—10 to 30 drops.

Salvia Officinalis—Garden Sage.

Sage was extensively employed in coughs, colds and fevers by Dr. Wooster Beach and other early Eclectics. They esteemed it so highly that one Eclectic author wrote: "Why dies the man whose garden sage affords?" Sage tea is a common domestic means of drying up the secretion of milk. The oil of sage is frequently used in tooth-powders and confections.

"The sage exerts a tonic influence on the skin, and to a less extent upon the kidneys and mucous membranes. It is not an active remedy, and hence too much must not be expected from

it. We employ it where the skin is soft and relaxed, with an enfeebled circulation and cold extremities. In the treatment of colliquative perspiration it answers an excellent purpose, if the condition above is maintained. If, however, the night sweat is preceded with hectic fever, and a dry, harsh skin, it will be useless.

"It will prove a good remedy in increased secretion of urine of low specific gravity; in such cases it may be associated with belladonna. It may also be associated with the bitter tonics in all cases in which there is atony and increased secretion from mucous membranes." (Scudder.)

Salvia officinalis is tonic, stimulant, diaphoretic, aromatic and anaphrodisiac.

Indications.—Excessive sweating, when the circulation in the skin and extremities is enfeebled, the tissues being soft, relaxed and feeling cool; relaxed conditions of mucous surfaces, which secrete profusely; flatulence connected with gastric debility; excessive venereal desire.

Dose.—Fluid extract, 15 to 60 drops.

Usual Dose.—10 to 30 drops.

Sambucus Canadensis—Elder.

Sambucus increases the functional activity of the excretory glands, especially of the skin and mucous surfaces, and when employed in large medicinal doses causes profuse diuresis. It is employed with the most gratifying results in diseases characterized by depravation of blood or deposits of unhealthy material. In tuberculosis and in syphilis it exerts a beneficial influence, and in skin diseases characterized by the formation of blebs and blisters which contain serum, and which, as soon as mature, discharge their contents and form crusts, it is an efficient remedy. In dropsical conditions, especially in that form of dropsy which sometimes follows scarlet fever and measles, sambucus constitutes a medicament of curative power, and in catarrhal obstructions of the nasal passages of infants it exerts a relieving influence.

"The elder is a stimulant to all the excretory organs, increasing secretion. It may be employed for the general purposes of an alterative—increasing waste, in syphilis, scrofula, and other diseases attended by deposits or depravation of tissues. It is especially useful in those cases where there is an edematous condition, or fullness of tissue from an increased amount of

water. We meet a case of chronic disease occasionally, in which the tissues are full and flabby, evidently from too much water; in these sambucus is a good remedy. It may be employed in dropsy, though its action is not so decided as the apocynum.

"As a local application the sambucus is specific to those eruptions that arise on full tissues (as above), and are attended with abundant serous discharge. Thus in some forms of eczema, especially eczema infantilis or *milk scald,* and in the above form of the disease, it will alone effect a cure. We also employ it in indolent ulcers, with soft edematous borders, and serous secretion, and in mucous patches with free secretion. An ointment is prepared by simmering the inner bark in fresh butter (old style), or a glycerole may be made, with the addition of the usual quantity of starch." (Scudder.)

"The elder is an example of a numerous class of common plants which, while not possessing medicinal properties of the highest value, are yet of sufficient importance to warrant a more careful study of their actions and uses than has usually been given them. Some of these plants have properties which enable them to meet certain single definite conditions better than almost or quite any other agent known; others will fulfill a number of common indications fairly well, though none of them, perhaps, in the best possible way. Both classes are worth studying, though the first is the most important. What we greatly want is the best agent in single conditions.

"Sambucus is one of the principal ingredients of two of the much-advertised remedies for dropsical and rheumatic conditions." (French.)

Sambucus canadensis is diuretic, alterative, deobstruent and purgative. In very large doses it is emetic.

Indications.—Abnormal conditions in which there is a fullness or edematous condition of the parts involved, giving them a watery and flabby appearance; hepatic diseases, especially of children; dropsies of all kinds, and especially those following scarlet fever and other febrile exanthematous diseases; edema of the tissues, with evident excess of water in the part; eczematous eruptions, with abundant discharge from the eruption; ulceration with free serous secretion; nocturnal asthma, coming on suddenly, the perspiration being suppressed during sleep, and returning as the paroxysm subsides.

Dose.—Fluid extract, 1 to 20 drops; specific medicine 1 to 20 drops

Usual Dose.—5 to 10 drops.

Sanguinaria Canadensis—Blood Root.

Blood root was a favorite remedy of the early Eclectics, and it contributed in no small degree toward the great success of Beach and his followers. They found a specific use for it in many wrongs of life, including pneumonia, hemorrhage of the lungs, croup, pulmonary affections, scarlet fever, hepatic diseases and suppression of the menses.

Sanguinaria is one of our most efficient remedial agents in diseases of the throat and air passages. As a cough medicine it has but few equals, and when specifically indicated will alone cure many unpleasant coughs. It also constitutes an important part of many cough mixtures which have been found useful in coughs presenting no marked specific indications. In chronic coughs it is absolutely necessary to continue the drug for a considerable period of time. Blood root is an agent of curative power in many cases of chronic skin disease, but the cases must be carefully selected in strict accordance with the specific indications herein given.

"In full doses we employ the sanguinaria as a stimulant to mucous membranes. This use is valuable in bronchitis with increased secretion, and in atonic conditions of stomach and bowels with increased secretion of mucus. In minute doses we employ it in cases of cough with dryness of the throat and air passages, feeling of constriction in the chest, difficult and asthmatic breathing, with sensation of pressure. In the same doses it is a stimulant to the vegetative system of nerves, and under its use there is an improvement in the circulation, in nutrition, and secretion." (Scudder.)

"The first and great indication for sanguinaria is debility—atony—either general or local. There is usually marked torpidity of the body, and the greater the torpor the greater the indications for sanguinaria. The body is cold, languid; the sympathetic is away below par. In most diseases to which it is applicable the mucous membrane is involved, and there is itching and burning of its surface; there is a sense of constriction, a fullness of the throat, swallowing and breathing become difficult, there is a sense of pressure or weight about the suprasternal notch—the patient fears asthma—he seems asthmatic. Besides these symptoms there is a perverted secretion (especially as to quantity) of the mucous membrane. Prof. Scudder made this distinction as to dose of sanguinaria, and we find it nowhere else. When there is profuse secretion with debility the full dose acts as a tonic or stimulant, and is curative; but when the same

condition of atony or debility is present and the secretions scant, the surface dry and irritable, the minute dose is indicated, and the large dose positively contraindicated.

"In many cases of membranous croup, but not in all, sanguinaria is the most efficient remedy. The throat burns, is swollen, with pain on swallowing; there is a feeling of rawness, etc. The remedy must not, in this case, be given for its emetic effects, but in much smaller doses.

"It is also an excellent remedy for cough if it is dry, irritable, hacking, teasing, a tickling in the throat. We find such a cough with many diseases; in pneumonia, with difficult expectoration; in bronchitis, in laryngitis, etc. To sanguinaria, in cough of a pectoral origin, many physicians add with benefit wild cherry in some form or other.

"In many chronic cases sanguinaria is a most active remedy for good. Given a case of chronic amenorrhea in which there is a general torpor of the body, the patient is cold, languid, there is no response to the usual milder remedies. Here sanguinaria becomes an emmenagogue. Because of its special action on the reproductive organs of the female, but more especially because of its general stimulating and tonic action upon the body through the vegetative system of nerves, the menstrual flow is brought about.

"In other chronic maladies, with the broken-down constitution, such as ulceration of the rectum, prolapsus, fistulæ, chronic ulcers of any part of the body, or a tendency to ulceration at the orifices of the body or at the angles of the mouth, in scrofula, in diseases of the liver, in rheumatism, and even in phthisis pulmonalis, sanguinaria proves to be a source of salvation to the sufferer.

"In chronic nasal catarrh, or in acute coryza, with much sneezing and tingling, with pain at the root of the nose, nose alternately dry and moist, and many times a profuse watery, acrid discharge, with loss of smell and taste, sanguinaria is a most reliable remedy. The same may be said of it in certain cases of spasmodic asthma, and this is especially true when there is a free discharge.

"We prescribe sanguinaria with much confidence in many cases of whooping cough. It will not cut the disease short (nor will any other remedy known to us), but it will greatly relieve the most distressing symptoms and lessen the number of paroxysms. The same is true of sanguinaria when it is prescribed in many of those severe headaches where there is nausea, chilliness, a fullness of the head, vertigo, etc." (Bloyer.)

Sanguinaria canadensis in small doses is a stimulant and tonic. In large doses it is sedative, expectorant, diuretic and diaphoretic. In very large doses it acts as a harsh emetic and narcotic. Excessive doses have caused death.

Indications.—Tickling sensation in the throat, or irritation of the throat with cough; bronchitis, with increased secretion; atonic conditions of the stomach and bowels, with increased secretion of mucus; throat and air passages dry, hot and swollen; harsh and dry cough; sense of uneasiness and burning in the stomach, with nervousness; laryngitis, with cough and tickling or dryness of the throat; respiratory diseases, when the inspiration is difficult and the throat and air passages dry, hot and swollen; sense of constriction in the throat, with difficulty in deglutition.

Dose.—Fluid extract, 1 to 10 drops (the latter is emetic); specific medicine, 1 to 10 drops (the latter is emetic).

Usual Prescription.—℞ Sanguinaria, gtt. v to xxx; water, ℥iv. M. Sig. Dose one teaspoonful every one, two or three hours.

The nitrate of sanguinaria undoubtedly represents the medicinal properties of sanguinaria canadensis to the fullest extent desired, and for internal use is a favorite preparation of the drug. It is freely soluble in water.

Dose.—1-20 to ½ grain (the latter is emetic).

Usual Prescription.—℞ Sanguinaria nitrate, gr. i to ij; water, ℥iv. M. Sig. Dose one teaspoonful every two to three hours.

Dose of Trituration (ten parts of nitrate of sanguinaria to ninety parts of sugar of milk).—½ to 1 grain.

Santalum Album—Sandalwood.

Sandalwood is employed as a stimulant to the urinary apparatus. It is frequently used in the treatment of gonorrhea after the acute inflammation has subsided.

The oil of sandalwood astringes mucous surfaces and controls excessive discharges. Stimulants and purgatives should not be taken during the continuance of this drug.

Indications.—Gonorrhea after subsidence of the inflammatory stage; leucorrhea when the discharge is profuse and offensive; subacute and chronic inflammation of mucous surfaces; catarrhal bronchitis; long-continued cases of gleet.

Dose.—Fluid extract, 30 to 60 drops; oil of sandalwood, 5 to 15 drops.

Usual Dose.—Oil of sandalwood, 5 to 10 drops, in capsules, three or four times a day.

Santoninum—Santonin.

Santonin is usually regarded as a perfectly safe remedy to employ in the treatment of children, and with proper precautions it is so. It should be borne in mind, however, that it is a powerful drug, and that, under some circumstances, large doses may do much harm. Even as small a quantity as two grains has caused the death of a feeble child.

Santonin, when administered in doses of from one-tenth of a grain to one grain, and in accordance with the specific indications herein given, is an efficient and safe remedial agent.

Santonin is a frequently needed anthelmintic, and as a remedy against the ascaris (round worm) it has no superior. It is also an efficient remedy against the oxyuris (thread worm), but it has no effect on the tape-worm.

In chronic uterine disease, when there is irritation, pain and scalding at the base of the bladder, or burning, scalding, tenderness and unpleasant sensations in the urethra or bladder, santonin is a very useful remedial agent, and in dysuria, suppression or retention of urine it exerts a curative influence which is unmistakable. It is also a remedy of superior merit in chronic nephritis, chronic cystitis and in chronic catarrh of the bladder.

"It exerts a *specific* action upon the bladder and urethra, stimulating contraction of the first, and allaying irritation of the second. It is especially valuable in cases of retention of the urine in children during protracted disease; in doses of half to one grain, it is prompt and certain. I have also employed it to relieve irritation of the urethra, especially in women suffering from uterine disease, and with good success.

"Its influence upon the nervous system needs to be studied. I judge it to be a nerve stimulant, and have employed it for this purpose to a limited extent." (Scudder.)

"A remarkable phenomenon attending the ingestion of medium doses of santonin is that of yellow vision, which may continue for several hours. There occasionally appears before the peculiar yellow vision, after a large dose of santonin, a violet color of the field of vision, the intensity of this color being in proportion to the darkness of the objects looked at. All light objects, such as windows, paper, etc., appear actually yellow. Red and blue appear often in their complementary colors—orange and green—so that carmine-red appears pale, madder-red a bronze color, and the sky and blue objects green. This, however, is not always the case, and it has been noticed

after the employment of santonin that red appears violet or light, and dark objects appear orange to one person, and to another green. This peculiar effect of santonin is believed to be due to a nervous change in the retina or in the brain." (Rose.)

Santonin is anthelmintic, tonic and, in large doses, narcotic. It imparts a green or yellow color to the urine. Urticaria and other affections of the skin have sometimes followed the use of santonin, and serious poisonous effects have also been produced by comparatively small quantities of the drug. A fatal case from overdoses of santonin which has been reported presented the following symptoms: Convulsions, accompanied by unconsciousness, twitching of the eyeballs, dilated pupils, cold sweat, weak pulse, feeble respiration, and, after several hours, sudden death.

Indications.—Intestinal worms, especially lumbrici and ascarides; white line around the mouth and frequent itching about the nose, which are marked symptoms of intestinal worms; retention of urine, especially in the advanced stages of acute disease of children; irritation, pain and scalding sensations during and after micturition; enuresis, dysuria and chronic cystitis; intermittent fever of infants simulating that caused by worms.

Dose.—¼ to 1 grain for child; 1 to 3 grains for adult. The drug may be given in tablet or third trituration.

Sarracenia Purpurea—Sarracenia.

Sarracenia stimulates the kidneys, and thus favors an increase in the secrétion of urine. It also exerts a stimulating influence upon the intestinal glands and liver, which makes for active elimination by these routes. It has been employed in zymotic diseases with advantage, and its eliminating properties are said to modify the course and sequelæ of scarlet fever and measles. In chlorosis and jaundice it is deemed a remedy of merit, and in syphilis it has often exerted a beneficial influence.

Sarracenia purpurea is tonic, stimulant, antizymotic, diuretic and laxative.

Indications.—Sluggish or torpid conditions of the kidneys, liver, intestines, uterus or stomach; zymotic diseases; jaundice; syphilis.

Dose.—Fluid extract, 1 to 20 drops; specific medicine, 1 to 20 drops.

Usual Dose.—5 to 10 drops every hour to every three hours.

Senecio Aureus—Life Root.

Senecio exerts a special influence upon the genito-urinary organs of both sexes. It is a most excellent remedy in many wrongs peculiar to women, and is especially indicated when there is a sensation of weight and fullness in the pelvis. In purulent cervical or uterine leucorrhea its action is corrective, and in dysmenorrhea and menorrhagia it has often proved useful. It is used with good success in subinvolution, and in chlorosis its action is very satisfactory. It is also a very efficient remedy in ovarian affections. In diseases of men it is equally valuable, and is specifically indicated in all abnormal conditions characterized by fullness and heaviness in the perineum, dragging weight and dull pain in the testicles and cords, together with urination that is both tardy and difficult, with frequency and tenesmus, burning and stinging, and lessened amount of urine.

"The senecio exerts a specific influence upon the reproductive organs of the female, and to a less extent upon the male. It relieves irritation and strengthens functional activity. Hence it has acquired the reputation of a 'uterine tonic.' It may be prescribed in all cases in which there is an atonic condition of the ovaries or uterus, with derangement of function. It makes little difference whether it is amenorrhea, dysmenorrhea or menorhagia, or whether it takes the form of increased mucous or purulent secretion, or displacement. The remedy acts slowly, and sufficient time must be given.

"In the male we prescribe it in cases of fullness and weight in the perineum, dragging sensations in the testicles and difficult or tardy urination. In both male and female we sometimes use it with advantage in painful micturition with tenesmus." (Scudder.)

Senecio aureus is tonic, emmenagogue, diuretic, diaphoretic and alterative.

Indications.—Enlargement of the uterus, with uterine or cervical leucorrhea; diseases of the reproductive organs of women, characterized by a sense of fullness, weight and dragging in the pelvis; soreness, pain and bearing-down in the region of the uterus; suppressed menstruation; atonic conditions of the ovaries and uterus, with impaired function; vicarious menstrua-

tion; defective action of the uterus; fullness and weight in the perineum, with dragging sensations in the testicles; difficult and tardy urination in the male; painful micturition, with tenesmus; dyspepsia attended with flatulence after meals; excessive secretion of gastric juice, with acidity and cardialgia.

Dose.—Fluid extract, 1 to 15 drops; specific medicine, 1 to 15 drops.

Usual Prescription.—℞ Senecio, gtt. x to ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Sennæ—Senna.

In small doses senna is an excellent remedy in flatulent and bilious colic. In large doses it is a safe and efficient cathartic. When used in doses sufficient to produce its purgative effects it is usually associated with other substances, such as manna, etc., to correct griping. A domestic tea is made by adding one-half to one tablespoonful of senna leaves, with a teaspoonful of fennel or caraway seeds, to a cupful of boiling water.

Senna should not be used as a cathartic when there is either irritation or inflammation of the intestinal canal.

Indications.—Irritation of the gastro-intestinal canal, producing colic; cases requiring purgative effects.

Dose.—Leaves, 10 grains to 3 drachms; fluid extract, 1 to 30 drops; specific medicine, 1 to 30 drops.

Usual Prescription.—℞ Senna, gtt. x to ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Serpentaria—Virginia Snakeroot.

Serpentaria promotes normal functional activity of the skin and circulation, and through its influence diaphoresis is promptly increased when deficient, and sweating restrained when abnormal. It also exerts a tonic influence upon the nervous system. Serpentaria is especially indicated in diseases characterized by torpid states, but it is not as well adapted to active inflammations and high fevers, except in their early stages. It constitutes a very energetic means of bringing out the eruption in the eruptive fevers, and is equally valuable in retrocession of the eruption. In conditions in which the secretions have been arrested by cold it is an efficient remedy, and in amenorrhea caused by cold it has

often been found useful. It also constitutes a good medicament in the early stages of periodic fevers.

"Serpentaria is diaphoretic, stimulant, tonic, stomachic and diuretic. It is especially valuable as a diaphoretic and tonic. To fulfill these indications in the treatment of disease, no article with which we are acquainted surpasses the one now under consideration. It may be exhibited as a diaphoretic during the early stages of febrile and inflammatory diseases with advantage; but it is in the advanced stages, especially in typhoid fevers, that we have found it most important. Acting as it does upon many of the secretions, stimulating and promoting them, and as an excitant to the vascular system, while at the same time it exerts a sustaining influence on the enfeebled system, it is rendered an agent of rare virtues in the cases referred to. Prof. Wood states that it is admirably adapted to the treatment of typhoid fevers, whether idiopathic or symptomatic, when the system begins to feel the necessity for support, but is unable to bear active stimulation.

"We have found the serpentaria very useful in the exanthematous diseases, when the excitement was feeble, and the eruption was tardy in making its appearance, for the purpose of facilitating the eruptive process. It is equally valuable when a retrocession has taken place, causing a determination to the surface, thereby relieving congestion of internal organs, and reproducing the eruption.

"In small doses it promotes the appetite; in large doses it produces diaphoresis if the surface is kept warm, and diuresis if exposed to the cold air; it may also cause nausea, and act as an aperient." (Scudder.)

Serpentaria in small doses is stimulant, tonic, diaphoretic and diuretic. In large doses it is emetic and cathartic.

Indications.—Sensation of weight and dragging in the loins, with scanty urine; sense of fullness in the chest, with difficult respiration; enfeebled stomach following exhausting diseases; suppressed secretions; dry skin; visceral affections caused by cold; colliquative sweating.

Dose.—Fluid extract, 1 to 30 drops; specific medicine, 1 to 30 drops.

Usual Dose.—1 to 10 drops.

Scilla Maritima—Squill.

Squill in small doses is a valuable remedial agent, but it cannot be continued for a long time, as it is liable to lessen the appetite and otherwise unpleasantly affect the patient. It is

contraindicated in inflammatory diseases. Atony is its leading indication. In large doses it is an irritant poison, causing inflammation of the alimentary canal and genito-urinary organs. It has proved fatal in the dose of twenty grains of the powder. Some persons are very susceptible to its irritant action.

"Squill possesses expectorant and diuretic properties, and in large doses it occasions vomiting and purging. It is employed as a stimulant expectorant, where there is evidence of a want of tonicity of the mucous membrane of the air passages, as in bronchitis and pneumonia, when the acute symptoms have been subdued; in chronic bronchitis and laryngitis, and in croup, occurring in children of a debilitated or strumous habit.

"It is sometimes advantageously combined with nauseants, even in acute inflammation, where there is much debility; but is more frequently combined with other stimulant expectorants, as the gum-resins, as an excitant to the mucous membrane. It is a well ascertained fact, but not generally known, that the squill, in substance, is a much better expectorant than any of its preparations.

"In dropsy presenting a dry, harsh skin, parched tongue, fevered lips, and contraction of features, the squill may be employed as a diuretic. In the majority of cases it has been used with digitalis, the dose being large, but it then proved beneficial in the opposite class of cases—where the circulation was feeble." (Scudder.)

Scilla maritima is diuretic, diaphoretic, expectorant, emetic and cathartic, but it should never be used as an emetic or cathartic.

Indications.—Bronchitis with increased secretion; inactivity of the secretory organs; atony of the bronchial mucous membranes; dropsy which does not result from organic change; non-inflammatory conditions to increase or lessen the activity of the kidneys; dibetes insipidus; all conditions requiring a stimulating diuretic and diaphoretic.

Dose.—Fluid extract, 1 to 10 drops; powder or pill, 1 to 3 grains, not to exceed 15 grains per day; syrup, 5 to 30 drops.

Usual Dose.—Specific squill, 2x, 1 drop three times a day; powder, 3x, 2 grains three times a day.

Scutellaria Lateriflora—Skull-cap.

Scutellaria exerts a direct influence upon the cerebro-spinal centers, controlling irritation. It constitutes an excellent remedial

agent in all diseses in which a tonic combining nervine powers is deemed necessary, such, for instance, as chorea, convulsions, tetanus, tremors, delirium tremens, hysteria, monomania, and that undefined condition known as nervousness.

Scutellaria was at one time deemed a positive antidote to rabies or mad-dog poison.

"Tonic, nervine, and antispasmodic. This is one of those valuable agents which a certain class of physicians consider inert; yet has proved especially useful in chorea, convulsions, tremors, intermittent fevers, neuralgia, and all nervous affections. In delirium tremens, an infusion drunk freely will soon produce a calm sleep. In intermittents, it may be beneficially combined with lycopus. Where teething has impaired the health of children, an infusion may be given with advantage. In all cases of nervous excitability, restlessness, or wakefulness, attending acute or chronic disease, or from other causes, it may be drunk freely with every expectation of beneficial results. It has also a tendency to keep the skin moist. It has been extolled in hydrophobia, but this is still a matter of uncertainty." (King.)

Scutellaria lateriflora is tonic, antispasmodic and nervine.

Indications.—Hysteria, with inability to control the voluntary muscles; nervousness, manifesting itself in muscular action; incoördination of muscular movements; tremors; twitchings; restlessness; agitation; sleeplessness; muttering delirium; subsultus tendinum; cerebral irritation from teething; delirium tremens.

Dose.—Fluid extract, 1 to 20 drops; specific medicine, 1 to 20 drops.

Usual Prescription.—℞ Scutellaria, gtt. x to ℥iv; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Silicea—Silica.

Silica exerts a special influence upon the organic substances of the body, involving prominently the bones, joints, skin, glands and mucous surfaces. It is especially adapted to imperfectly nourished constitutions resulting from deficient assimilation. It promotes suppuration, and as long as there is infiltration, which can only be removed by suppuration, silica is an efficient remedy, and should be continued until all infiltration has disappeared.

Silica is a remedy of value in gouty rheumatic affections.

Its curative action in these conditions is said to be owing to its stimulating effects upon the involved connective tissue cells. In the early stage of whitlow its action is promptly curative, and in arthritis when there is suppuration of the joints it is often useful. In marasmus when there is great wasting of the body and an exceedingly large head, the patient being very nervous and irritable, silica is employed with much advantage, and in brain-fag in school girls, causing confusion of mind, it has often proven corrective. Silica is also deemed a remedy of merit in bronchitis when the expectoration is pus-like, and is especially adapted to the treatment of children having abnormally large heads, open sutures and large abdomens. In suppurative otitis when the discharge is thin, ichorous and offensive, and attended with bone destruction, this agent is highly recommended. Silica is a most efficient remedial agent in gleet of long standing, and many cases have been reported in which it proved curative after many approved remedies had failed to improve the patient's condition. In phthisis when there is a profuse discharge of fetid pus, or nightly paroxysms of cough, with tickling in the suprasternal fossa, it is of value, and in tuberculous deposits on the skin, showing themselves in lumpy tumors, it constitutes a medicament of great usefulness. It also exerts a restraining influence in night sweats. Silica has been highly recommended in chronic syphilis with suppuration or induration, and in tertiary syphilis with nodes, caries, necrosis and a discharge of offensive pus, it has been employed with excellent results.

"Silica may be given in cases of abscess where there is a slow and poor reparative process, or no inclination to repair; in nasal catarrh, with obstruction, the mucous membrane being pale, with watery secretion; perverted nutrition, disease of the epithelial covering of skin, deformity of nails, dry and harsh hair, etc." (Scudder.)

"The writer has prescribed silica in cases of carbuncles, boils and abscesses in their formative stage, and the morbid processes disappeared. Also in cases of small hard lumps just under the skin, and pustules anywhere on the body, but usually on the face and neck. Use it in profuse, offensive, persistent sweating of the feet, also when there is greenish, yellow, profuse, pus-like expectoration.

"This is a wonderful remedy for injuries in and about joints, where there seems to be but little if any inflammatory conditions, but where there is occasional or persistent pains, especially when

the parts are moved. Sometimes we meet with cases of injured knees, elbows or wrists, and other joints from jumping, falling or being thrown upon them that leaves a sore and painful condition that is ofttimes very persistent.

"Here we have a very potent remedy in silica, and you will be surprised how rapidly it will relieve, when other remedies have failed after long and repeated trials. It seems to act favorably on tendons, cartilage and bone in this condition. Very persistent cases have been relieved completely in four or five days. In chronic inflammations of the large or small joints we have in silica the most positive remedy that has yet been discovered. It is also a wonderful helper in gouty conditions. In many cases of gout its action is slow, but persistent use will bring the reward." (Kinnett.)

Indications.—Cystic tumors around the eyes; styes; suppurating wounds; nasal catarrh; ozena, with fetid, offensive discharge; ulcerations producing acrid, corroding discharge; pale earthy complexion; difficult dentition; chronic dyspepsia, with acid eructations and heartburn; diarrhea, with cadaverous odor; urine loaded with pus and mucus; profuse acrid leucorrhea; lumps in mammæ, with tendency to suppuration; copious expectoration of thick, yellowish-green pus; caries of bone; ulcers, boils, carbuncles, felons and malignant pustules; scrofulous eruptions; enlarged and suppurating glands, especially cervical glands.

Dose.—Trituration, 3x, 5 to 15 grains.

Usual Prescription.—℞ Silica, 3x, gr. xx to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour to every three hours.

Simaba Cedron—Cedron Seed.

This agent is highly esteemed as a remedy for hydrophobia, and cases are reported in which it is said to have proved successful in allaying the spasms and curing the disease after all other remedies had failed to have any effect. It is also said to be a positive remedy for the bites of venomous serpents. When desirable it may be administered hypodermically.

Simaba cedron is antispasmodic, antiseptic, antiperiodic and tonic. In very large and in frequently repeated doses it sometimes produces griping of the bowels and diarrhea.

Indications.—Bites of venomous snakes; hydrophobia; cholera morbus and colic; chronic dysentery and chronic diarrhea;

dyspepsia and all diseases of the stomach accompanied with impaired or difficult digestion; toothache; intermittent and remittent fevers.

Dose.—Fluid extract, 1 to 8 drops. In poisonous bites the fluid extract should be administered in doses of 6 drops and the wound dressed with it.

Sodii Benzoas—Sodium Benzoate.

Sodium benzoate, associated with rhubarb, has been used as a cholagogue with excellent results, and in pharyngitis it has been employed as a means of modifying the pain. It is often used as a substitute for sodium salicylate in septic diseases. It is slower in its action, but its effects are more permanent, and it is less likely to do harm. Sodium benzoate is often used as a preventive and curative agent in diphtheria, erysipelas and other infectious diseases. A 5 per cent. solution by inhalation is said to be of benefit in phthisis.

Sodium benzoate is antiseptic and antipyretic.

Indications.—Fevers characterized by periodicity; puerperal and other infectious fevers.

Dose.—5 to 30 grains.

Usual Dose.—5 to 15 grains.

Sodii Bicarbonas—Sodium Bicarbonate.

Sodium bicarbonate is a useful agent in hyperacidity caused by fermentation. In this condition the drug should be taken soon after meals. When administered one-half hour before meals it is of value in deficient secretion of gastric juice.

A strong solution of this remedy constitutes a good application with which to relieve pains of burns; and a weak solution is of value in fevers when used as a sponge bath, as it increases the activity of the skin. The pains and swelling of the joints in acute articular rheumatism are often greatly relieved by enveloping the articulations in a hot solution of this salt.

"This salt is less caustic than the carbonate of sodium, and less unpleasant to the taste, but in other respects its properties and effects upon the system are analogous to those of the other caustic alkalies.

"It is employed in dyspepsia, attended with a redundency of acid in the stomach, as an antacid; also in cases of lithiasis,

accompanied with an excessive secretion of uric acid. It is also resorted to occasionally as an alterative and resolvent in scrofula, glandular enlargements, syphilis, and as a diuretic in hydropic cases, especially in those resulting from glandular diseases. It has been resorted to with advantage in infantile croup, to facilitate the expectoration of the pseudo-membranous formation in the trachea, in doses of one grain every five minutes.

"It is frequently employed in the form of the effervescing draught, seidlitz or sodium powders, etc. They allay thirst, fever, nausea, and vomiting, and prove highly refreshing to the patient. They are also useful as lithontriptics and diuretics, but should be employed in the lithic or uric acid diathesis." (Scudder.)

Sodium bicarbonate is antacid.

Indications.—Broad and pallid tongue, with a whitish coating on it; irritating urine, containing excess of uric acid and urates, with a tendency to the formation of calculi; excess of acid from fermentation of food, causing intestinal irritation and excessive secretion; pallor of mucous membranes; all conditions showing deficient alkalinity of the blood.

Dose.—5 to 30 grains.

Usual Dose.—5 to 15 grains.

It may be added to water until a slight taste of the salt is evident, and two teaspoonfuls of the solution given every hour or two.

Sodii Boras—Sodium Borate—Borax.

Borax is but little used internally. Its action is similar to that of the alkalies. It exerts a special action upon the uterus, large doses contracting the uterine muscles and acting as an emmenagogue. Large doses also act as a gastric intestinal irritant. Borax has been employed in epilepsy, and with success in some cases, but it is inferior to the bromides.

As a wet dressing borax prevents putrefactive changes, and is of value in the treatment of abscesses, ulcers and nearly all kinds of sores and wounds healing by granulation. A solution containing one drachm of the powder to a pint of water will constitute a prescription of sufficient strength in these cases. A drachm of borax to a quart of water, as hot as can be used, makes a good wash and injection in vaginal leucorrhea and other minor wrongs of the genitals.

One drachm of borax well mixed with five drachms of

glycerine constitutes a curative application in aphthæ of the mouth in nursing children, fissures of the nipple, and ulcerative stomatitis. This application is also useful for painting the pharynx, larynx or nasal cavities, in mild chronic catarrh.

Borax is antiseptic, diuretic and emmenagogue.

Indications.—Fermentative changes in the bladder; atonic conditions of mucous membranes; dysmenorrhea and amenorrhea. Locally: Aphthæ of the mouth in nursing children; spongy gums; fissures of the nipples; pruritus vaginæ; leucorrhea; as a surgical dressing.

Dose.—1 to 30 grains.

Usual Dose.—1 to 20 grains, in capsules or in solution. It should not be administered internally in glycerine, as in such cases an acid reaction may occur.

Sodii Bromidum—Sodium Bromide.

Sodium bromide is extensively employed in insomnia caused by nervous excitement, especially when such excitement has resulted from overwork of the brain or overstrain of the nervous system. It constitutes a useful remedial agent, and may be employed in abnormal conditions characterized by nervous excitement, nervous paroxysms from irritation, exalted nerve action, from temporarily increased nerve force, fullness of the capillary circulation, or marked determination of blood to the nerve centers. It is not a suitable remedy in anemia. Sodium bromide is less depressing than the potassium salt.

An elixir of the bromide of sodium is frequently used, in doses of from one to two drachms. The salt may be conveniently administered in milk or food.

Sodium bromide is sedative, hypnotic and antispasmodic. It possesses much the same action as bromide of potassium, but is said not to cause heart weakness, and is therefore to be preferred in the case of children.

Indications.—Active cerebral congestion; reflex cerebral irritations of children during dentition; cholera infantum, or eruptive diseases; insomnia from overwork of the brain.

Dose.—1 to 30 grains.

Usual Dose.—1 to 10 grains.

Sodii Chloridum—Sodium Chloride.

Common salt is extensively employed by spray or douche to meet the indications given in this article. A strong solution may be injected into the rectum for the purpose of removing ascarides. In the form of saline spring waters it is employed to promote the activity of tissue change and increase the excretion of urea, and for this reason the saline spring waters are beneficial in chronic scrofulous conditions affecting the glands, bones and skin. As an addition to food its use is grateful and many times essential. It is also extensively used by subcutaneous injections in cases marked by danger of failing circulation. Dr. Leon Rosenbusch gives the following indications for its employment, and the quantities to be injected: Sudden collapse (five to eight drachms of a 6 per cent. solution); paresis of the heart muscles from any acute disease (five to eight drachms at once, and then one to two drachms daily); acute gastro-enteritis, great weakness after severe vomiting and diarrhea (eight to twenty drachms of a tepid solution of six parts per thousand); hemorrhage from lungs, stomach or bowels (five drachms, then one and a half drachms daily); heart failure in consequence of chronic disease, and cachectic conditions (one and a half drachms daily for several days).

The great value of normal saline solution (six-tenths of 1 per cent. solution of sodium chloride, or about a teaspoonful of the salt to a pint of water), as a therapeutic agent is now universally recognized. In shock and collapse, either simple or that resulting from excessive hemorrhage, toxemia, etc., it has been and is being employed with very gratifying success. The practical value of intra-abdominal, intravenous, intrarectal and subcutaneous administration of saline solution is now established beyond a question, and its efficiency as an emergency remedy in certain well-defined conditions is fully vouched for by observers of ability and unimpeachable integrity. This solution is said to correspond to the fluid portion of the blood—to be the ordinary pabulum of the corpuscles. Investigators have observed after its administration a marked increase in the number of colored disks, as well as an increase in numbers and activity of the leucocytes. The saline solution, therefore, not only fills the collapsed vessels, in cases of excessive hemorrhage, for instance,

and thereby relieves the overstrained heart, but it also stimulates the blood corpuscles and indirectly the nerve centers.

"Things that are so common are frequently overlooked. It also seems to be forgotten that common salt is necessary to the well-being of the sick, though it would seem that at least this should not be overlooked. A person with protracted disease, like typhoid fever, will be allowed to go days, and even weeks, without salt in his food, especially if he is háving a milk diet. This should be carefully looked after, for it may be the difference between a good recovery and death. I have seen a marked improvement within twenty-four hours, from the giving of salt with food, or in the drink.

"In the infantile dyspepsia of children nursing the bottle, marked benefit will sometimes follow the addition of a small portion of salt to the milk, and the child will make flesh and become plump, and, much to the mother's satisfaction, good tempered. It is also a most excellent remedy in some cases of cholera infantum.

"Some years since common salt was used very successfully in our southwestern country to cure ague. It was given in doses of from ten to thirty grains every three hours, and if the stomach was loaded it was first used as an emetic. I have used it successfully in a few cases, the tongue being broad and pallid, or simply broad (natural color), but pitting where it came in contact with the teeth.

"As a local application (ʒij to ℥ss in water Oj), it exerts a very pleasant and cleansing influence upon mucous tissues, and is thus used as a douche or spray in nasal catarrh, as a gargle in pharyngitis, and as an injection in leucorrhea and gleet.

"A solution of common salt (grs. v to grs. xx in water ℥j) is a most excellent stimulating collyrium, and will sometimes cure chronic conjunctivitis. It is certainly one of the best remedies we háve for disease of the canaliculi and lachrymal sac." (Scudder.)

Sodium chloride is tonic, anthelmintic, purgative and, externally, stimulant.

Indications.—Locally: Chronic nasal catarrh; pharyngeal catarrh; vaginal leucorrhea; pruritus vulvæ; ascarides.

Dose.—10 grains to 1 ounce (the latter is emetic).

Sodii Iodidum—Sodium Iodide.

Sodium iodide exerts an influence somewhat similar to that of potassium iodide, but its action is of a milder character. It promotes the absorption of effusions and indurations, whether

of rheumatic or syphilitic origin. It also increases the activity of the kidneys, skin and mucous membranes.

Sodium iodide in small doses is alterative and diuretic. In very large doses it is an irritant.

Indications.—Periosteal thickening, with infiltration of neighboring tissue; hypertrophy of glands; inflammatory effusions or thickening of organs; paralysis or impairment of sensibility; pallid togue and mucous membranes.

Dose.—2 to 30 grains.

Usual Dose.—2 to 10 grains.

Sodii Nitras—Sodium Nitrate.

Sodium nitrate increases the excretion of urea, and also influences the secretion by skin and kidneys. In addition to this action, it exerts a special influence upon the vegetative system of nerves, controlling irritation and inflammation.

"The indications for its use in acute diseases are—a swollen and puffed tongue, covered with a white or yellowish mucus; the mouth may be dry or moist, but the tongue must never show contraction, be elongated and pointed, or deep red. In other words, we must observe the general indications for the administration of an alkali.

"Probably the special cases in which it will be found of most advantage are these: When the pulse is full, the surface flushed, slightly dusky or purplish; eyes injected, though not dry; an increased perspiration, though the skin remains hot." (Scudder.)

Sodium nitrate is diuretic, cathartic, refrigerant and irritant. In very large doses it causes vomiting, excessive depression, and sinking of the pulse. Its therapeutic action is similar to that of potassium nitrate, but it is less likely to disturb digestion.

Indications.—Chronic rheumatism and lumbago, when the urine is scanty, high-colored, and becomes thick on cooling; mucous surfaces puffed and covered with white or yellowish fur, especially when the urine is scanty, high-colored, and thick on cooling.

Dose.—10 to 30 grains.

Usual Dose.—10 to 15 grains, in solution, largely diluted.

Sodii Phenolsulphonas—Sodium Phenolsulphonate—Sodium Sulphocarbolate.

This drug has been employed with advantage in fermentative dyspepsia, and has also proved a useful remedy in diarrhea. It

has been strongly advocated as a remedy of great curative power in typhoid conditions. Locally, it is employed in aqueous solution as a spray, wash and gargle.

Sodium sulphocarbolate is antiseptic and astringent.

Indications.—Septic tendencies; typhoid conditions. Locally: Fetid and gangrenous conditions; pseudo-membranous exudations occurring in scarlatina and diphtheria.

Dose.—5 to 30 grains.

Usual Dose.—5 to 15 grains, in solution.

Sodii Phosphas—Sodium Phosphate.

Sodium phosphate is not only valuable as a restorative, but it exerts an influence upon the intestinal tract which makes for normal activity. It is an excellent purgative, and is especially indicated when the stools show a deficiency of bile. In duodenal catarrh it is employed with excellent results, and in chronic constipation it is often a useful remedial agent. It is also deemed efficient as a means of retarding the formation of biliary calculi.

"As a restorative I employ it extensively with children, in those cases where there is impaired nutrition, with pallidity of tongue and mucous membranes. In these cases it will be found to exert a markedly beneficial influence. It is generally administered in milk in doses of one to three grains, four times a day. We occasionally find a case in the adult where it will prove beneficial. These are uniformly marked by the pallid mucous membranes, and inaction of the bowels. The dose will vary from five to fifteen grains.

"Its second use is as a laxative for children. We find cases of constipation that will yield to no remedies, the child suffers from indigestion, and occasionally from colic. In these cases phosphate of sodium in doses of from three to five grains, three times a day, will give permanent relief.

"Phosphate of sodium is also an excellent laxative for the adult, especially in cases of habitual constipation, with hardened feces. In this case twenty to thirty grains in a large glass of water is taken on going to bed at night." (Scudder.)

"Sodium phosphate is a remedy of great value in stomach and intestinal disorders where a corrective, or even a saline laxative, is required. It is decidedly useful where the tongue has a whitish coating, and the stools are green and white and foul-smelling. It is also useful in infantile dyspepsia, when the tongue and membranes are pale, the eructations sour, and there is occasionally colic. When the above indications are present it corrects mal-

nutrition, associated with either irritation or inactivity of the bowels. It is a good remedy in jaundice, biliary catarrh, hepatic colic, bilious headache and obstinate constipation."

Sodium phosphate is a mild saline cathartic and restorative.

Indications.—Duodenal catarrh; imperfect assimilation of food; jaundice; hepatic colic and headache, when the tongue is broad and pallid; pale tongue and membranes; general malaise and inanition; anorexia with tender abdominal muscles; dirty tongue and sallow skin; tongue coated golden-yellow and moist, or a dry furred coating upon a pallid tongue; green and white diarrhea, with malnutrition; or hard white, pasty or spongy stools which float upon water; habitual constipation with hard, dry stools; bilious headache.

Dose.—1 grain to 1 ounce.

Usual Dose.—5 to 30 grains, in water or milk, three times a day.

Sodii Salicylas—Sodium Salicylate.

The action of sodium salicylate is similar to that of salicylic acid, but it is less irritating to the stomach, and is therefore ordinarily to be preferred to the acid. In various forms of rheumatism it is deemed a remedy of unmistakably curative power, and in acute coryza, especially where there is fullness of the head across the eyes, with watery secretion, sneezing, chilliness and general depression, its action is promptly corrective. Infra-orbital pain, cutaneous pruritus and inflammatory diseases of the urinary organs also come within its curative range.

Sodium salicylate should be used with caution. As soon as the pain is relieved the dose should be lessened and the intervals between the doses lengthened. At first the dose may be repeated every hour.

Sodium salicylate is sedative, antirheumatic and antiseptic. Very large doses may cause death.

Indications.—Rheumatic fever; migraine; acute articular rheumatism; epidemic cerebro-spinal meningitis; general cutaneous pruritus; coryza.

Dose.—2 to 15 grains.

Usual Dose.—2 to 10 grains, in tablets or solution.

Sodii Succinatum—Sodium Succinate.

Sodium succinate has been employed in many cases of catarrhal jaundice with marked advantage, and in some other catarrhal

conditions it has been found useful. An investigation of its influence over abnormal conditions of mucous membranes would undoubedly prove profitable.

Indications.—Catarrhal jaundice; abnormal conditions of mucous membranes.

Dose.—5 grains every three hours.

Usual Dose.—3 grains three times a day.

Sodii Sulphas—Sodium Sulphate.

Sodium sulphate—also known as Glauber's salt—may be employed in doses of forty to eighty grains at once, or dissolved in a pint of water and slowly sipped during the course of an hour, as a quickly-acting laxative, which is free from any unpleasant effects. It has been highly recommended in chronic constipation, ulcer of the stomach, benign hepatic difficulties, diabetes, gout and obesity. In weak solution it is beneficial in many cases of diarrhea, dysentery and chronic skin diseases. As an antidote in poisoning by carbolic acid or lead, the following prescription is employed: ℞ Sulphate of sodium, ℥ss; water, ℥v; simple syrup, ℥i. M. Sig. Dose one tablespoonful every two hours.

"To stimulate the process of retrograde metamorphosis, and stimulate excretion, we use a very dilute solution of sulphate of sodium, say ten to twenty grains to the pint of water, to be taken freely. In this way we obtain the effects of some of the best mineral waters (laxative sulphur waters). In cases of gall-stones (deposits of cholesterine) this will be found an excellent treatment; as it will when the tissues are full, pale and sodden, the tongue also full and pale, and pitting where it comes in contact with the teeth.

"A solution of sulphate of sodium is also one of the best remedies for lead poisoning, and may be used by workers in lead as a prophylactic. Whilst the iodide of potassium would be preferred in severe cases, the sulphate of sodium is borne for a much longer time." (Scudder.)

Sodium sulphate is diuretic and purgative.

Indications.—Conditions requiring a cooling saline cathartic or laxative; lead poisoning.

Dose.—1 to 4 scruples.

Usual Dose.—20 to 40 grains, dissolved in a glassful of water.

Sodii Sulphis—Sodium Sulphite.

Sodium sulphite exerts an energetic antizymotic influence in all diseases in which the mucous membranes are markedly pallid

and the tongue is coated with a white or very dirty light-colored substance. It is therefore a very efficient remedy in that very common condition met with in many forms of disease shown by the broad, pallid, white or dirty-white coated tongue, associated with a fetid or mawkish breath, although the latter is not always present. The exudate upon the tongue is pasty, and fermentative and putrefactive processes are at work. While these conditions are met in many disorders, they are particularly observable in typhoid and other fevers, in fermentative dyspepsia, ptomaine poisoning, tonsillitis, erysipelas, smallpox and many forms of sore throat. In all such cases the judicious use of sodium sulphite will promptly lower the temperature, reduce the frequency of the pulse, relieve the nervous system and establish secretion.

"The influence of zymotic causes of disease on the fluids and solids is not well understood, but we know that it impairs their life, even if it does not cause more rapid sepsis.

"In some cases this impairment of vital power is all the change that can be noted, retrograde metamorphosis progressing more slowly than in health or ordinary disease. But the remedy we are studying is more than *antiseptic*—it antagonizes the zymotic cause whether it produces sepsis or not.

"In local diseases from a zymotic cause—as diphtheria, cynanche maligna, some forms of catarrh and influenza, erysipelas, surgical fever, etc.—such remedies as sodium sulphite exert their specific action when locally employed, as well as in their internal administration. The indications, however, must be as named above—pallidity, with pasty exudates upon tongue.

"Their action in arresting the growth of microscopic fungi, and during diseases arising from this cause, is specific. In yeasty vomiting, presenting sarcina ventriculi, the disease is speedily checked by the sulphites. In some forms of aphthous sore mouth and throat, speedy relief is given by their local application. Some chronic skin diseases are rendered very stubborn by these minute growths, and here also the sulphites will prove valuable." (Scudder.)

Sodium sulphite is antizymotic, antiseptic and diuretic.

Indications.—Tongue broad and pallid, with a pasty coating on the tongue of a whitish or yellowish, thick and moist substance; pallid mucous tissues, with light and pasty exudations.

Dose.—5 to 60 grains.

Usual Prescription.— ℞ Sulphite of soda (specific), ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Solanum Carolinense—Horse Nettle.

Solanum has been somewhat extensively employed in epilepsy, and with a success which would seem to demand a thorough investigation of the therapeutic properties of the plant. It has been found to exercise the greatest restraining influence in the form of epilepsy which is most severe or is brought on at the menstrual periods. In infantile convulsions it has often proved useful, and in hysterical convulsions and in chorea good results have been obtained from its administration.

Dr. M. C. Thrush, who has had considerable experience in the use of horse nettle in epilepsy, presents his conclusions as follows:

"1. It is of greatest value (probably better than any one known remedy) in grand mal of idiopathic type without hereditary taint, and where the disease has begun beyond the age of childhood.

"2. It is perhaps next of greatest value in hystero-epilepsy with marked convulsive seizures. In cases of petit mal the drug does not seem to do the great good that we have noted in the major type of the disease.

"3. In cases of well-advanced epilepsy of any type in which there is degeneration of the cerebral neuron, the drug will act specifically for a time, even better than the bromides, but it will finally be determined that the bromide salts will ultimately control the attacks better in these cases.

"4. The foregoing clinical study has brought out sufficient clinical evidence to warrant the statement that the inherent advantage of vegetable depresso-motors is great as compared with any mineral salt given with the same intent, since destruction of blood corpuscles by the latter is a most detrimental feature towards lessening the resistance of the individual in a disease where, above all, the constitutional tonicity should be favored as ideal treatment.

"5. A thorough impregnation of the nerve cells can alone be had, and therefore cure hoped for in epilepsy, in proportion as solanum is pushed to the fullest physiological dosage, and maintained through periods of months, a year not being too short a time to warrant its discontinuance.

"6. The fluid extract of the drug made freshly is the ideal form of pharmaceutical preparation given in ascending doses, commencing with one fluid drachm and increasing to the full constitutional effect. It is to be preferred decidedly to the bromides in those cases where it can be used advantageously, because no toxic symptoms follow its free administration, and the mental faculties are not impaired by its use."

As the chief constituent of solanum is a powerful alkaloid, known as solanine, it would be well to exercise caution in following Dr. Thrush's advice to "push this remedy to the fullest physiological dosage."

"I had a very obstinate case of epilepsy, a white woman thirty-five years old, who had been having epileptic fits from her childhood. At her menstrual periods the seizures were very severe. I have seen her remain unconscious for hours, convulsion after convulsion occurring, with frothing at the mouth. She would generally have two or more seizures a week. She had gone the rounds of all the physicians in reach of her; all of them, myself included, had failed to give any relief. I went to see her, and persuaded her to try the nettle. She consented to do so without one particle of faith in its beneficial effects. I had very little more faith than she had. I gave her the necessary instructions to get and prepare the medicine, and to take a tablespoonful three times a day. About three months after she began the use of it her husband reported that she had not, with the exception of a slight drawing of the neck and hands, had a convulsion since she began the use of it. She continued its use three months, and has had no symptoms of the disease.

"After seeing the effect in the case just detailed, I determined to try it in other convulsive disorders. About this time I had a case of Bright's disease in a pregnant woman, about the sixth month of gestation, being very much swollen, and her kidneys acting very little. She was taken with convulsions. On examination of the urine I found it very rank and highly charged with albumin. I tried various means for controlling the convulsions and starting the kidneys, but completely failed in my effort. I determined to try the nettle. I had about four ounces of a strong tincture on hand, which I put her on. I gave a teaspoonful every three hours. It completely controlled the convulsions, and I also learned it had other virtues; besides being an anodyne and antispasmodic, it acted very freely on the kidneys. It is a very active diuretic. She went to full term, and was delivered of a living child.

"If I ever have a case of tetanus, I intend giving it a trial, and confidently expect to control the disease with it. I have treated quite a number of cases of epilepsy with the solanum, and have several cases under treatment now. I have seen it completely control the convulsion of traumatic epilepsy, and thereby make life bearable. I have seen it do what I never saw anything else do—cure epilepsy. I do not claim that it will cure all cases of epilepsy; but I do claim that if it is intelligently given it will benefit all cases and cure a large percentage of them. I have known people who have taken potassium bromide until they were

almost mental wrecks, but I have never seen any deleterious effects from the nettle. I tried it in a case of chorea in a girl twelve years old, who had been subject to it for several years; it entirely cured her in a few weeks." (Napier.)

Solanum carolinense is antispasmodic, anodyne and diuretic.

Indications.— Epilepsy, especially grand mal of idiopathic type; infantile and hysterical convulsions; chorea; puerperal convulsions.

Dose.—Fluid extract, 10 to 60 drops (above 60 drops with caution); specific medicine, 10 to 60 drops (above 60 drops with caution).

Usual Dose.—10 to 30 drops in water, and so far as possible anticipating the convulsion.

Solanum Dulcamara—Bittersweet.

Dulcamara is a valuable remedial agent in acute diseases resulting from cold or suppression of the cutaneous secretion, and in bronchitis it is often employed with advantage. In chronic skin diseases, especially of the scaly form, it is used with success, and in suppression of the menses from cold or dampness it is often the only needed medicament. Dulcamara is an efficient remedy in scrofula, syphilis and all diseases characterized by an impairment of the blood. In rheumatism, resulting from long-continued exposure to cold and dampness, it is also a remedial agent which should not be neglected.

"The bittersweet has the reputation of being a good alterative in cutaneous diseases, syphilis, scrofula and inflammatory deposits, and we conclude that it increases waste and excretion. It exerts a marked influence upon the cerebro-spinal centers, when used in large doses, but this has not been studied."

"I would advise the employment of the remedy in small doses in those cases of chronic disease in which the circulation is feeble, the hands and feet cold and purplish, with fullness of tissues and tendency to edema. I do not know that it will prove better than other remedies, but it deserves investigation." (Scudder.)

Solanum dulcamara is alterative, diuretic, diaphoretic, discutient and narcotic. In very large doses it causes vomiting and severe prostration.

Indications.—Suppression of secretions, caused by exposure to cold; bronchial and nasal catarrh; acute bronchitis; cold and purplish extremities; feeble circulation; fullness of tissues;

scaly condition of the skin; pustular eczemas; abnormal states of the skin caused by scrofula and syphilis; irritation of the nervous system accompanied by great depression; suppression of the menses, with headache and nausea; acute ovarian congestion; catarrh of the bladder; great excitement of the venereal functions.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Dulcamara, gtt. xx to ʒi; water, ℥iv. M. Sig. Dose one teaspoonful every two to four hours.

Spiritus Ætheris Nitrosi—Spirit of Nitrous Ether—Sweet Spirit of Nitre.

Spirit of nitrous ether is frequently employed in Bright's disease, congestion of the kidneys and painful affections of the urinary apparatus. It is also deemed a good remedy in flatulent distension of the stomach, to allay nausea, and to quiet nervous agitation.

"It may seem a little strange to some that an alcohol should produce sedation, and be classified with the sedatives, yet a few experiments with this agent will show that it is true, and that sweet spirits of nitre will lessen the frequency of the pulse, reduce the temperature, and promote secretion. For this purpose, one-half to one teaspoonful may be added to a half glass of water, and given in doses of a teaspoonful every hour. The common use of the remedy as a diuretic is well known, though I object to the large dose given." (Scudder.)

Sweet spirit of nitre is diuretic, diaphoretic, stimulant and antispasmodic.

Indications.—Cardiac dropsy, especially in children; flatulence and intestinal spasm; febrile diseases attended with nausea and vomiting, gastric irritability or restlessness; fevers of children, when the skin, though hot, is slightly moist; inflammatory states of the urinary organs; suppression of urine and dysuria in infants.

Dose.—10 to 60 drops, well diluted.

Usual Dose.—10 to 30 drops, every half hour or every hour in fevers, and from 20 to 60 drops every three or four hours when used as a diuretic. It should be always well diluted with water. When employed in the treatment of the fevers of

children, the following will constitute an efficient prescription: ℞ Sweet spirit of nitre, ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Sticta Pulmonaria—Lungwort.

Sticta is employed in irritation of the base of the brain with marked advantage, and in affections of the respiratory organs it constitutes a medicament of value. It is effective in chronic coughs, especially when the cough is dry, rasping, wheezing and persistent, and in hay fever it is often useful. In nasal catarrh it is an efficient remedy, and in many cases of bronchitis it may well constitute a part of the treatment. Some cases of rheumatism also come within its curative range.

"I have employed it with success in atonic lesions of the respiratory organs, attended with dull pains in the chest, increased by full inspiration. There is also a sense of soreness, as if bruised, or that follows very severe exertion. In these cases it exerted a marked influence, relieving the cough and unpleasant sensations; even checking the chills, hectic fever and night sweats, in confirmed phthisis, for some considerable time.

"The strongest indication for the sticta will be found in pain in the shoulders, back of the neck, and extending to the occiput. With this indication I find that it will cure rheumatism, or indeed almost anything, and the more I use it the more highly I prize it. During the past winter I have had occasion to give it in some very unpleasant cases of scarlet fever, and with a most marked benefit." (Scudder.)

"Sticta acts upon the base of the brain, relieving irritation. The pneumogastric and the parts which it supplies are markedly affected by it. By its sedative action upon the vagus it lessens irritation, lowers temperature, and controls cough, when these disorders depend upon wrongs of that nerve. Its chief use is as a cough remedy, though it acts well in some cases of heart affections. It is indicated when there is pain in the occipital region and between the scapulæ, with cough, or with cough and pain in the respiratory muscles. The pulse is soft, but has a peculiar thrill. Use it in rheumatism with the pain located as above mentioned, and particularly if persistent." (Locke.)

Sticta pulmonaria is sedative, demulcent and mucilaginous.

Indications.—Short, hacking cough; cough of acute bronchitis; asthmatic cough, accompanied by quick, sharp pains; pain in the shoulders extending to the neck and back of the

head; sharp pain, with soreness above the scapulæ; rheumatism, when the muscles of the chest are involved, and also when the muscles of the shoulders are sore and tender; hay fever.

Dose.—Specific medicine, 5 to 10 drops.

Usual Prescription.—℞ Sticta, gtt. x to xx; water, ℥iv. M. Sig. Dose one teaspoonful every half hour to every three hours.

Stigmata Maidis—Corn Silk.

Corn silk is a very useful remedial agent in both acute and chronic inflammation of the bladder, and in irritation of the bladder it exerts a relieving influence. In pyelitis it is used with good success, and in urinary troubles associated with gonorrhea it is deemed a remedy of merit. It is also beneficially employed in the urinary wrongs of the aged, and in dropsy resulting from cardiac weakness it often constitutes an important part of the treatment. In catarrhal conditions of the genito-urinary organs this agent exerts a curative power which is unmistakable, and in lithemia it increases the quantity of urine, and decreases the excessive proportions of uric acid and the urates.

Stigmata maidis is diuretic, antiseptic and demulcent.

Indications.—Chronic inflammation of the bladder; uric acid and phosphatic gravel; excessive alkalinity of the urine; catarrhal cystitis; irritation of the bladder; dropsies caused by disease of the heart; painful urination.

Dose.—Fluid extract, 20 drops to 2 drachms; specific medicine, 20 drops to 2 drachms.

Usual Dose.—30 to 60 drops every two to three hours.

Stillingia Sylvatica—Queen's Root.

Stillingia exerts a specific influence upon the mucous membranes of the throat, larynx and bronchi, relieving irritation and favoring normal nutrition and functional activity. Many cases of chronic pharyngitis have yielded to the action of this remedy after other approved remedial agents had failed to afford any permanent relief.

"Stillingia increases waste and excretion, but its principal action probably is upon the lymphatic system, favoring the formation of good lymph, hence good blood and nutrition. Experience shows that it favorably influences the system in secondary syphilis, in some forms of scrofula, and in cases

of chronic disease where the tissues are feeble and not readily removed and renewed.

"I believe it to be more especially useful in those cases where there is predominant affection of mucous membranes, and secondly, where the skin is involved. In these cases I have used the simple tincture, largely diluted with water, with much better results than I have obtained from any of the compounds of stillingia or alterative syrups.

"It is an excellent remedy in the treatment of some cases of chronic laryngitis, speedily relieving the irritation and cough, and we also employ it in chronic bronchitis with like good results.. Now, if it is possible to determine the class of cases in which it is thus beneficial, the reader may use it with advantage.

"So far as my experience extends, they are those with tumid, red, glistening mucous membranes, with scanty secretion. This condition, indeed, seems to be the index for the use of the remedy for every purpose. In syphilis, in scrofula, in chronic inflammation with deposits, the same red glistening color with scanty secretion, is a guide to the use of stillingia." (Scudder.)

"Stillingia liniment is a purely Eclectic remedy, and the school is entitled to the credit of this preparation, however our claims may be disputed in other matters. This is one of the really good things handed down to us by the fathers, and has steadily maintained its position against newer and more scientific remedies. As an external application to the throat and chest in sore throat and colds, stillingia liniment is unexcelled, and this preparation with compound emetic powder, constitutes the mother's armamentarium for battling that arch enemy of childhood, the croup. Not only in croup may stillingia liniment be used with advantage, but also as an application to boils, bruises, and painful swellings about the body this remedy will be found an effective agent in relieving irritation and subduing pain. Given internally, in one or two-drop doses, the liniment allays laryngeal irritation and checks the irritating cough of that condition. We prescribe it as a cough remedy by adding ten drops to four ounces of glycerine. Dose, teaspoonful every two hours." (Watkins.)

Stillingia sylvatica is tonic, alterative, stimulant, diuretic.

Indications.—Chronic sore throat; irritation of superior pharynx and just behind the fauces, causing cough; paroxysmal cough accompanied by laryngeal irritation; skin diseases showing marked irritation, with thin acrid discharge; ozena; syphilis.

Dose.—Fluid extract, 1 to 15 drops; specific medicine, 1 to 15 drops.

Usual Prescription.—℞ Stillingia, gtt. x to ʒii; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Dose of Liniment.—2 to 5 drops on sugar every fifteen minutes to every two hours.

Strontii Bromidum—Strontium Bromide.

Strontium bromide exerts a sedative influence on the central nervous system which is fully equal and similar to the other bromides. It also exercises a soothing and tonic influence upon the stomach, and is especially useful in chronic diseases of the stomach in conjunction with other indicated remedies. In dyspepsia it is used with advantage, markedly lessening the formation of gases.

"Its action is against both the acetic and lactic acid fermentations, and especially against the gases of decomposition. It produces no distressing effects upon the stomach even in large doses, and it may even be taken in quantities of four drachms, maximum, with each meal." (Germain-See.)

Strontium bromide is gastric, intestinal and heart sedative, antacid and tonic.

Indications.—Disorders of digestion in which alkaline agents are indicated; acid fermentation; irritation of the nervous system.

Dose.—5 to 30 grains.

Usual Dose.—10 to 15 grains.

Strophanthus Hispidas—Strophanthus.

Strophanthus, according to the latest and most authoritative investigations, exerts a specific action upon the cardiac muscular fiber. Its field of therapeutic action, therefore, includes all cases in which it is necessary to establish compensation, all cases of arterial degeneration in which a remedy which causes more energetic contraction is required, all cases of cardiac disease in which diuresis is necessary, all cases of weak and irritable heart, and all cases of cardiac disease in childhood or old age. The use of the drug should be avoided in fully or over-compensated hearts, in those which present advanced muscular degeneration or mechanical defects of great extent. Care should be taken that the dose administered is not too large or too frequently repeated. In the dyspnea accompanying diseases of the heart,

strophanthus gives much relief, and in acute heart failure, with marked dyspnea, its beneficial action is very prompt. As a remedy in muscular insufficiency, and disturbances due to valvular disease, to empyema, and to nephritis, with edema and ascites, it is used with good effect. It also exerts a direct quieting effect on the nervous system.

"The advantages which strophanthus possesses over digitalis may be summed up as greater rapidity, modifying pulse-rate within an hour; absence of vaso-constrictor effects; greater diuretic power; no disturbance of digestion; absence of cumulation; greater value in children; greater safety in the aged." (Wilcox.)

"If strophanthus be given in large doses it produces gastro-intestinal irritation with vomiting and diarrhea. Small doses, however, act as a bitter tonic, improve the appetite, augment gastric action and promote digestion. In proper doses it strengthens the heart-muscle, slows cardiac action, increases the interval between beats, reduces the pulse rate, and powerfully increases arterial tension, not by any effect (to any extent at least) upon the vessels, but by strengthening the heart-muscle, giving increased power. Whether or not the drug is cumulative is still an unsettled question, though it probably is not cumulative unless given too freely in over-lapping doses. The action of strophanthus upon the heart is probably greater than that of any other drug, and its active principle is of far greater potency than the digitalis derivatives.

"Strophanthus is a remedy for weak heart from debility of the cardiac muscle with lack of proper contractile power, as shown by a rapid, weak pulse, and very low blood pressure. The disordered action of the heart is due to lack of tonicity and not from weak walls due to depositions of fat, in which case the drug must be used with extreme circumspection, though in small doses it has been recommended by some as a remedy for cardiac fatty degeneration, as it has also in atheroma of the arteries of the aged. It is a remedy for precordial pain and for cardiac dyspnea. It has been strongly endorsed in heart affections with disorders of compensation. Strophanthus is a remedy for valvular heart disease only so far as there is muscular insufficiency, where the compensatory increase of muscular action is not sufficient to offset the valvular insufficiency." (Felter.)

Strophanthus hispidas is a heart tonic and a diuretic. It should not be mixed with any vehicle, but should be dropped in water when used, as it quickly precipitates its active principles in any vehicle. In very large doses it is a cardiac poison, and paralyzes the heart.

Indications.—Irregularity of the heart's action; precordial pain; palpitation; dyspnea; valvular disease, with regurgitation; edema; anasarca; Bright's disease; weak heart from debility of the cardiac muscle; disordered action of the heart from lack of tonicity; disorders of compensation.

Dose.—Tincture, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Dose.—2 to 5 drops, in water, every two to four hours.

Strychninæ Sulphas—Strychnine Sulphate.

Strychnine sulphate is an agent of marked curative power in all cases presenting the specific indications given in this article. The indications for strychnine—an alkaloid usually obtained from nux vomica—and its salts are identical.

Strychnine increases the appetite and is of great value in cases of impaired digestion. As a bitter its action is to stimulate the flow of saliva, and increase the secretion of gastric juice. It imparts tone to the muscular walls of the intestines, and through this influence peristalsis is increased, many times resulting in the cure of constipation caused by lack of muscular tone. In atonic dyspepsia strychnine is a very efficient remedial agent. It stimulates the nerve centers, thus rendering the digestive process more perfect, and enabling the stomach to respond more readily when it receives the stimulus of food. The gastric catarrh which often afflicts persons who use alcoholic drinks may be beneficially treated with this medicament. It is also many times useful in vomiting of pregnancy, as well as in that which often distresses the victim of phthisis. The tonic action of strychnine upon the intestinal muscles renders it a valuable remedy in habitual constipation and atonic diarrhea.

As a tonic in chlorosis and anemia strychnine is highly esteemed and used with great advantage. It is also a remedy of usefulness in the treatment of delirium tremens, and as a means of preventing the usual effects of alcoholic intoxication it is employed with marked success. In the treatment of alcoholism the nitrate is said to be more efficient than the sulphate.

In cases exhibiting a predisposition to post-partum hemorrhage the sulphate of strychnine exercises a restraining influence which is unmistakable, and in the night sweats of consumptives

it is used with satisfactory results. It is also useful in the treatment of diabetes mellitus.

Strychnine is a most valuable cardiac tonic, having a marked action on the cardiac nervous system, and also upon the heart muscle. The irregularity of the heart's action which many times accompanies hysteria, hypochondriasis and pregnancy is greatly relieved by moderate doses of this drug, and in failing blood pressure it is often used hypodermically with good effect. It has caused the pulse to become full and strong, even when it was almost imperceptible, and death appeared imminent.

In pneumonia, typhoid fever and other diseases accompanied by dyspnea and feeble heart's action, strychnine exerts a corrective influence, but it is probably less valuable than it is sometimes thought to be. It is used with advantage in bronchial and neurotic asthma, and in many forms of neuralgia, especially of the visceral variety, it is deemed an agent of curative power. In bronchitis it is used with satisfaction, and as a means of relieving coughs of nervous origin it has long been highly valued.

Strychnine is rapidly absorbed and slowly eliminated. It is mainly eliminated by the kidneys, but to some extent by the skin and salivary glands. Strychnine has been detected in the urine as late as eight days after it had been taken into the stomach. The drug being very poisonous, great caution should be exercised in its administration. The smallest lethal dose is said to be one-sixth of a grain. A fatal dose has caused death in fifteen minutes, but two hours is the more usual time. In some cases death has not occurred until six or eight hours after taking the drug.

Strychnine sulphate is tonic and stimulant.

Indications.—The indications for strychnine and its salts are identical—periodicity, when there is marked atony of the stomach; cold stage of intermittent fever; wandering neuralgic pains; debility and nervous prostration, with impaired circulation of the blood, feeble action of the heart and small pulse; diphtherial paralysis; local paralysis, as of the bladder and sphincter ani; lead colic; paralysis of the vocal cords; facial paralysis; paralytic affections of the ocular muscles, when of functional origin; paralysis of the lower extremities due to spinal concussion, or rheumatic or syphilitic affections of the

meninges of the spinal cord; paraplegia, when there is no evidence of acute inflammatory or structural changes in the cord.

Dose.—1-64 to 1-16 grain.

Usual Dose.—1-64 to 1-30 grain.

Strychnos Nux Vomica—Nux Vomica.

Nux vomica is a remedy for atony, either general or local, and should only be used in that class of conditions. When there is irritation of the nerve centers or of the organs of digestion, it is contraindicated. It is a valuable agent when the tongue is broad and pallid—showing atony; but when the tongue is narrow and pointed, with red tip and edges—showing irritation—its exhibition will only add to the patient's suffering. In the latter condition minute doses of ipecac are indicated. In constipation, when the tongue is broad and full, one or two drops of nux vomica in one-half glass of water three times a day will give the most gratifying results. In cases of severe shock from burns or surgical operations, it is a medicament of great sustaining power.

"Nux vomica exerts a specific influence upon the intestinal canal and associate viscera that renders it a most valuable remedy.

"In minute dose we employ it to arrest nausea and vomiting, when this arises from gastric irritability and not from irritant material in the stomach. The cases are those in which there is feebleness of the organs, and not where there is irritation and inflammation. For this purpose we employ it in cholera infantum with marked benefit, and in cholera morbus and Asiatic cholera to relieve this symptom.

"It is *the* remedy in all cases of congestion of *liver,* spleen, or portal circle. Given a feeling of fullness in right hypochondrium, pain in side or shoulder, sallowness of face, yellowness of eyes, yellow coat on tongue, I prescribe nux vomica with a certainty that I never felt in the olden time.

"If an intermittent fever presents these evidences of visceral derangement, nux vomica is *the* antiperiodic, or at least it prepares the way for the kindly and curative action of quinine. In bilious remittent fevers with these symptoms nux vomica is the first remedy indicated. In diarrhea with these symptoms we prescribe it with the certainty that the discharges will be speedily arrested and the stomach and intestinal canal left in good condition. In dyspepsia with these symptoms we obtain speedy and permanent relief from the use of the remedy.

"It is here, as we have found it in the consideration of other

remedies, if you can once determine the exact indication for its use, you may employ it whenever you find these indications, no matter what may be the name of the disease or the condition of the patient otherwise.

"We employ it to relieve pain in the stomach and bowels, where there is atony. It makes no difference whether it is the colic of childhood or of the adult, acute or chronic. It is not a remedy for pain dependent upon irritation with determination of blood, or upon muscular spasm.

"In addition to the symptoms named as indicating the use of nux vomica, may be named hypochondriac pain, umbilical pain, or pain in forehead associated with nausea; yellowish or brownish maculæ, in chronic disease, are also indications for its use. In some cases a peculiar yellowish sallow ring around the mouth will be found indicative of impairment of innervation from the solar plexus, and nux will prove the remedy.

"We find this peculiarity in the action of nux vomica, which we have noticed with some of the more prominent of the specific medicines, and which, indeed, is true of all—when distinctly indicated, it may be *the* remedy for the entirety of a disease. Thus, taking a fever presenting the symptoms of nausea, hypochondriac and umbilical pains, full, moist tongue, with slight yellow coat, and sallow skin, nux vomica relieves gastric irritation, is promptly sedative, relieving irritation of the nervous system, stimulates secretion—indeed, it is promptly curative. Take a case of dysentery with these characteristic symptoms, and relief is speedy and the cure rapid.

"The influence of nux vomica and strychnine upon the spinal cord is well known, and this seems to be its principal use in medicine. Whilst I think it better, in the majority of cases, to restrict its use as above, there are some in which we employ it for its influence upon the nervous system. These are:

"In typhoid and asthenic disease, where there is impairment of spinal innervation, and in consequence imperfect or enfeebled respiration, we give strychnine or nux vomica with advantage. Indeed, in those cases in which the respiratory function can only be carried on under the influence of the will, it is the only remedy we can rely on.

"In the same classes of disease, the tendency to retention of urine is met by the use of the same remedy.

"In some cases of the same diseases, where a feeble circulation is associated with general impairment of muscular power and inability to co-ordinate muscular movement, we use nux vomica with advantage.

"Nux vomica or strychnine should never be employed in the treatment of paralysis so long as any evidence of inflammatory action exists; neither should it be used if there are marked evidences of cerebro-spinal congestion, until this is removed. It

is the first remedy employed in cases of paralysis presenting the symptoms of visceral derangement we have already named. In other cases it is only employed as a nerve stimulant when the nerve centers are free from disease." (Scudder.)

"All remedial effects which are permanent must be produced gradually. Diseased conditions are almost invariably the result of a gradual retrogression from the normal condition, or perfect health. Hence, in our attempt to aid nature in her efforts to restore the normal equilibrium, we can best use those agents which will act, not strongly and quickly—they have their place in certain conditions, and are then indispensable—but those which will gently and without too much disturbance bring about the desired result. Among such drugs there are none which are superior to specific medicine nux vomica, only it must not be overlooked that it will not do to continue the remedy too long, without alternating for a week or two with some other indicated agent. Nux vomica is a cumulative remedy, and strychnine is especially dangerous if long continued." (Howes.)

"As specific ipecac was the remedy for irritation of the gastro-intestinal canal, nux is the remedy for atony. The indications are: A sallow skin, fullness of the stomach and bowels, inaction or tendency to costiveness, pain in bowels, pallid or coated tongue. It will arrest vomiting and nausea frequently, but not when the evidences of irritation are present. It arrests diarrhea, chronic diarrhea when it is due to an atonic condition, and there seems to be want of power. In dyspepsia or chronic gastritis, in combination with muriatic acid, it excels any or all preparations of pepsin. In colic, when due to indigestion, the pain being in the umbilical region, either alone, or in alternation with specific colocynth, it will effect a cure." (Mundy.)

Nux vomica is a spinal stimulant, tonic, laxative, diuretic and diaphoretic. In large doses it is a powerful poison.

Indications.—Difficult breathing when asleep; nausea and vomiting, when the tongue is broad and pallid; yellowish discoloration about the mouth; diarrhea when the tongue is broad and pallid, and there are colicky pains; pain in the region of the liver; pain around or pointing to the umbilicus; hypogastric pain resembling colic; want of power in the bladder to void urine; inability to command the voluntary muscles.

Dose.—Fluid extract, 1 to 3 drops; specific medicine, 1-10 to 3 drops.

Usual Prescription.—℞ Nux vomica, gtt. i to v; water, ℥iv. M. Sig. Dose one teaspoonful every hour.

Stylosanthes Elatior—Afterbirth Weed.

This agent has been successfully employed as a means of relieving irritability of the uterus during the latter months of gestation. It quiets abdominal pains, and thus relieves the child-bearing woman of much suffering. It also gives tone to the uterine muscles, and in this way increases expulsive power and facilitates parturition. When administered in doses of ten or fifteen drops three times a day for three or four weeks previous to confinement it is said to render the first stage of labor much shorter and less painful.

Stylosanthes elatior is uterine sedative and tonic.

Indications.—Great irritability of the uterus; continued severe neuralgic pain in the region of the uterus; frequent pains resembling labor pains previous to full term; abdominal pains during the last months of pregnancy; false labor pains.

Dose.—Fluid extract, 10 to 20 drops.

Usual Dose.—15 drops three times a day. The fluid extract of this plant will not mix with water. The medicine should, therefore, be dropped in a little water when used.

Sulphomethanum—Sulphonal.

Sulphonal is a useful remedy in sleeplessness, and is especially adapted to the sleeplessness of alcoholics and to that occurring in delirium tremens. It is kindly received by the stomach, and never impairs digestion or lessens the appetite. In prolonged fevers it has often proved a remedy of great usefulness. Sulphonal is best administered completely dissolved. The powder or tablet may be dissolved by stirring in a glass two-thirds full of either boiling water, tea or milk. Then add a little cold water to the hot solution to reduce it to a drinkable temperature.

When taken in this way sleep results in a short time, and is more profound and dreamless than when the powder is taken dry on the tongue or in wafers.

Sulphonal is hypnotic.

Indications.—Nervous insomnia following cerebral excitement; nocturnal restlessness of fever patients; long-continued excitement in sufferers from mental disease.

Dose.—10 to 30 grains.

Usual Dose.—15 to 20 grains.

Taraxacum Officinale—Dandelion.

Taraxacum exerts a stimulating influence upon the entire gastro-intestinal tract, promoting functional activity. It increases the flow of bile into the intestines. Dandelion is not a very energetic remedy, and is better adapted to chronic than acute diseases. It has been used in chronic skin diseases with good success, and has proved especially valuable when such wrongs were associated with an abnormal condition of the liver. In fact, all diseases complicated with derangements of the liver come within its corrective influence.

Taraxacum is another of the simple plant remedies which gave to the early Eclectics their great success in the treatment of pathological conditions. In referring to dandelion Dr. Wooster Beach said:

"I consider this plant one of the most valuable in the materia medica. It is excellent for gravel and kidney complaints. It is much used in liver complaints, dropsy, jaundice and hypochondria. It is a valuable hepatic, diuretic, aperient, subtonic and deobstruent."

Taraxacum officinale is tonic, hepatic stimulant, diuretic and laxative.

Indications.—Atonic conditions of the gastro-intestinal tract; torpor or engorgement of the liver or spleen; chronic diseases of the skin.

Dose.—Fluid extract, 5 to 30 drops; specific medicine, 5 to 30 drops.

Usual Dose.—10 to 20 drops.

Tela Araneæ.

This remedy is prepared from the web of a medicinal species of spider known as *Tegenaria Medicinales.* These spiders weave a large, angular and nearly horizontal web.

In many abnormal conditions tela constitutes a medicament of value. In dry, nervous cough it is an efficient remedy, and in hysteria it is an agent of great merit. In intermittent and remittent fevers it is used with much advantage, and in functional diseases of the heart it constitutes a stimulant of corrective power. It also relieves muscular spasm and promotes sleep.

"Many people who come to California are in poor health and are sensitive to cold. They are anemic and weak and complain of feeling chilly. Being in a run-down condition, they feel uncomfortable and suffer from cold, particularly if living in a

passive state of inaction. A little fire in the stove or grate removes the chilly feeling for the time being; or a stimulant will produce a like beneficial result, only that the effect is temporary and the remedy must be repeated. But exercise is the best stimulant, and if the patient is able to take a brisk walk or do some light manual labor every day in the open air, the good effect of such exercise is apparent at once by an increased feeling of warmth over the entire body. Cases, however, occur sometimes where the feeling of a strange chilliness persists, and is not easily overcome, that may be an effect of the climate. Although the weather is never extremely cold, yet it is impossible for such a person to keep warm; and to put on extra clothing only seems to intensify the cold sensation.

"Some time ago I read an article in one of our medical journals by Dr. H. T. Webster on Tela Araneæ. I was impressed by the paper as it suggested a remedy for the unnatural chilly feeling just mentioned. I prescribed the remedy at the first opportunity and found its effects satisfactory. I prescribe it frequently and always with good results. The indication for its use is a persistent feeling of cold that is usually accompanied by weakness and often by nervousness. I add one drachm of Lloyd's specific tincture of tela to a half tumbler of water and of this mixture give a teaspoonful every two hours.

"Previous to reading Dr. Webster's article I had never used tela, although I remember hearing spider web mentioned as a tonic in fever and ague in college days. Its effect seems to be exerted directly upon the vasomotor nerves, as it noticeably improves the circulation and overcomes chilliness and nervous depression.

"The action of tela is not as rapid upon the circulation as some other remedies, but its effect is more permanent. If an immediate decided action is necessary it can be accompanied or preceded by atropine or glonoin in such doses as the case seems to require to produce the desired effect.

"Tela is almost neutral in color and taste, which is an advantage in the administration of any drug. The disgust that is created in a patient by the repulsive appearance or unpleasant flavor of a medicine often nullifies its good effect. As between two indicated remedies I always choose the most palatable and find an advantage gained by so doing. Such a choice may seem to be a trifle, but it is, as a rule, appreciated and has its reward, as every patient prefers pleasant to nasty medicines." (Munk.)

"Whenever a case presents, be it acute or chronic, in which the patient finds himself prone to continual chilliness, unable to get comfortably warm by the aid of proper clothing, apartment and fuel, tela is the first remedy to be thought of. The demand for it is emphasized if the skin is continually cool and clammy, and if

the chilliness is quickly aggravated by dampness. A patient in this condition presents us with what Grauvogl designated a 'hydrogenoid constitution,' or condition, and this is his specific indication for tela. We ought, then, to regard the phrases, 'cool, clammy skin' and 'hydrogenoid condition' as synonymous in their meaning, in this connection, both being specific indications for tela. Dr. Pierce thus sums up the indications for this remedy: 'Masked periodical diseases, in hectic, broken-down patients. In all diseases that come up suddenly, with cool, clammy skin and perspiration and cold extremities; in nocturnal orgasm in either sex. Numbness of the extremities when sitting still or lying down. It relieves spasm of the arterioles, and stimulates capillary circulation. It relieves hyperesthesia of the cerebro-spinal nerves and the great sympathetic that depends upon debility. It is the greatest heart stimulant in the materia medica, and lobelia is only second to it.'

"Résumé: Tela is specifically indicated in debilitated subjects of neurotic tendency, with cool, clammy skin, protracted sensation of chilliness, with or without nervous complication, especially where periodicity is in evidence. Given when the key-note, chilliness, long continued, is present, it is liable to remove accompanying neurotic complications, at the same time that it corrects the faulty condition of the circulation." (Webster.)

Tela araneæ is antiperiodic, tonic, stimulant and nervine.

Indications.—Persistent feeling of cold or chilly sensations; marked periodical diseases in hectic, broken-down people; diseases that come on suddenly with cool, clammy skin and perspiration and cool extremities; numbness of the extremities when sitting still or lying down; excessive nocturnal orgasms in either sex.

Dose.—Specific medicine, 5 to 10 drops in water every hour to every three hours.

Usual Prescription.—℞ Tela·araneæ, gtt. v to ʒi; water, ʒiv. M. Sig. Dose one teaspoonful every hour to every three hours.

Thuja Occidentalis—Arbor Vitæ.

Thuja exerts a special influence upon the glandular system, and is deemed an excellent remedy in glandular indurations. It also specifically influences the urinary apparatus, and constitutes a medicament of decidedly corrective power in dribbling of urine in the aged and in urinary incontinence in the young. It is also of value in cystic irritability. In chronic wrongs of the prostate gland it has been used with beneficial results. It is said to be

a useful remedy in the early stages of cancerous conditions, and in syphilis it is employed both internally and locally with good results.

Locally thuja is used extensively and with good success in many cases. In hydrocele, after thorough evacuation of the sac, two drachms of a solution consisting of one drachm of a non-alcoholic preparation and one ounce of warm sterilized water, is injected into the tunica vaginalis testis, and squeezed into every part of the sac. It causes some pain and inflammation, but effects a permanent cure. The drug has also been used for this purpose in full strength. Usually not more than two injections are required in order to cure hydrocele.

"The greatest value of thuja internally is for the relief of urinal dribbling of the aged and the young, provided paralysis does not exist in the former or no preputial adhesion or phimosis is present in the latter. In five or six drop doses it relieves nocturnal enuresis in children when merely functional, and in the same sized doses it assists the local action of aqueous thuja in gleet when accompanied by granular urethritis. Sometimes the following will serve better in habitual bed-wetting: ℞ Specific thuja, gtt. xxx; specific belladonna, gtt. xx; water, fl. ℥iv. M. Sig. One teaspoonful four times a day. Specific thuja gives comfort in that unfortunate condition in old men with enlarged prostate in which the urine constantly dribbles, entailing much discomfort and misery, and producing unsightly stains upon the clothing. Whether it will reduce enlarged prostate has not been satisfactorily determined, but that it relieves weakness at the neck of the bladder is well established. It is especially useful in cystic irritability when associated with eczema or with gout. Specific thuja is a remedy for atonic amenorrhea when the genital tissues are flabby and lifeless." (Felter.)

"My method of using thuja in the treatment of hydrocele is as follows: In an ounce of warm water pour an ounce of specific thuja. Mix by drawing up a quantity in a syringe, and forcing it back with the descent of the piston. Then draw up about two drachms of the dilute mixture in the barrel of the syringe, to be ready for use. Send a large exploring needle into the sac of the tunica vaginalis testis, and let the fluid escape. Now, before withdrawing the needle, place the nozzle of the loaded syringe into the needle's open mouth, and with a plunge of the syringe's piston send the diluted thuja into the cavity recently distended with serum. Then to make the liquid enter every crevice in the sac of the hydrocele, the fingers should

pinch and knead the scrotum quite vigorously. The hollow needle is then withdrawn, and the provoked pain is considerable for a half hour or so. The patient then goes about his business, and no additional treatment is required. For a day or two there is some swelling of the scrotum, making it appear that there has been a re-accumulation of serum, yet this passes off in a week, and the disease is radically cured." (A. J. Howe.)

Thuja occidentalis is anodyne, stimulant, antiseptic, alterative, tonic and astringent. Its principal action is on the skin, mucous membranes and generative organs. It is contraindicated in inflammatory states of the urinary tract.

Indications.—Syphilitic and other diseases of bad blood, with warty excrescences or ulceration; catarrhal diseases of the female generative organs; enuresis; seminal emissions; vesical irritation, especially in aged women; atonic conditions following dysentery; incontinence of urine in children; chronic diarrhea and chronic troubles of the prostate gland; dribbling of urine in the aged, when not of a paretic nature; eczema, especially of the dry variety. Locally: Senile and other forms of gangrene; hemorrhages caused by malignant growths; fissured anus and hemorrhoids; warts, whether of the face, hands or genitals; syphilitic eruptions; bulging nevi; balanitis, or abrasions or excoriations on the head of the penis, or around the corona glandis; catarrhal ulceration of the uterine neck (by means of tampon of thuja and glycerine); urethral caruncles (diluted and applied on absorbent cotton or painted on with camel's hair brush).

Dose.—Fluid extract, 1 to 15 drops; specific medicine, 1 to 15 drops.

Usual Prescription.—℞ Thuja, gtt. x to ℥iv; water, ℥iv. M. Sig. Dose one teaspoonful every two or three hours.

Thymol—Thymol.

Thymol has been recommended as an intestinal antiseptic in dysentery, diarrhea and typhoid fever. It has also been successfully used as a means of limiting fermentation during a proteid diet in the treatment of diabetes.

Thymol is deemed a very efficient anthelmintic for the hook worm, when employed in doses of five to twenty grains.

Thymol is frequently used as a means of removing odors from the hands in obstetric and surgical practice, and as a

substitute for phenol in surgical operations. One part of thymol to eleven hundred parts of water constitutes an efficient solution. An ointment composed of one part of thymol to nine parts of paraffin ointment is useful in psoriasis and other skin diseases.

Thymol is antiseptic, deodorant and anthelmintic.

Indications.—Diarrhea, dysentery, and typhoid fever, as an intestinal antiseptic; diabetes, to limit fermentation; uncinaria duodenale and uncinaria Americana. Locally: Foul odors from decomposition of tissue or fluids; septic germs; organized and living ferments; ichorous ulcers; eczema; fetor of suppurating wounds and burns.

Dose.—1 to 5 grains in pills or capsules.

Trifolium Pratense—Red Clover.

Trifolium has been extensively employed in whooping-cough, and usually with modifying results. Irritable conditions of the larynx and air passages, especially when characterized by spasmodic cough, are greatly relieved by this agent; and in the cough of measles it is beneficially employed. It is also useful in most cases of bronchial and pulmonary irritation, and as a remedy for dry, irritable coughs in general it is deemed valuable.

"The red clover exerts a specific influence in some cases of whooping-cough and in the cough of measles. It is not curative in all, but when it does good, the benefit is speedy and permanent. It may also be prescribed in other cases of spasmodic cough, in laryngitis, bronchitis and phthisis. We should be able to tell the exact condition where it proves beneficial, and where it fails, but thus far the use has been wholly empirical. In the further use of the remedy all the symptoms should be noted. It has given much satisfaction thus far, and is likely to prove a very valuable remedy." (Scudder.)

Trifolium pratense is alterative, deobstruent, antiseptic and antispasmodic.

Indications.—Irritable states of the larynx and pulmonary organs, with spasmodic cough.

Dose.—Fluid extract, 1 to 20 drops; specific medicine, 1 to 20 drops.

Usual Prescription.—℞ Trifolium, gtt. x to ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every one to three hours.

Trillium Erectum—Birthroot.

Birthroot is a useful remedy in many abnormal conditions, and is especially so when the wrong is due to relaxation of mucous surfaces. It is a soothing, stimulating, astringent tonic, influencing the mucous membranes, especially of the generative system. It has been called birthroot on account of its value during pregnancy, as when used during pregnancy it lessens the pains and difficulties at the time of delivery. It is also a useful remedy for diseases of women. By some it is considered specific for female weakness, good for prolapsus, excessive discharges, hemorrhages and various other female complaints. It is claimed by good authority that birthroot is of value in all forms of hemorrhage. It would no doubt prove to be of much value in hematuria in malarial districts. At least it deserves a thorough trial in such conditions. It would likely act well in urinary conditions with rhus aromaticus and erigeron canadensis. The action of erigeron canadensis and trillium erectum very much resembles each other in all forms of hemorrhage. It is difficult to say which is the strongest hemostatic, but both are good and should be better known. Trillium is of value in all forms of diarrhea, either acute or chronic. It can be given internally and used by enemata also. It is antiseptic, which makes it of value in diarrhea when used by enemata, and adds to the usefulness of its astringent properties. If desired, when used by enemata, it could be combined with plantago major, as plantago is an astringent and anodyne of great value in such conditions.

Trillium erectum is stimulant, tonic and astringent.

Indications.—Hemorrhages from mucous surfaces, especially of the uterus after confinement, abortion, or when due to relaxation; catarrhal conditions of the mucous membranes of the air passages or genito-urinary tract, when due to vascular engorgement; diarrhea, either acute or chronic.

Dose.—Fluid extract, 5 to 60 drops.

Usual Dose.—5 to 10 drops.

Triticum Repens—Couch Grass.

Couch grass acts specifically upon the urinary tract, relieving irritation and lessening the frequency and pains of urination. It also exerts a moderate influence upon the bowels. On account

of its demulcent and emollient qualities it is especially recommended in cystic irritation. In gonorrhea its curative power is promptly manifested, and in leucorrhea it is a useful remedy. In incontinence of urine, with a constant desire to urinate, accompanied by an intense burning sensation, it is also an efficient medicament.

Triticum repens is diuretic, aperient and demulcent.

Indications.—Catarrhal and purulent cystitis; irritation of the urinary apparatus; aching in the back which accompanies lithemia; dysuria and tenesmus; acute and chronic prostatitis; strangury and hematuria; lack of free secretions from the kidneys; excessive irritability of the bladder from any cause.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Dose.—5 to 10 drops.

Turnera Aphrodisiaca—Damiana.

Damiana exerts a tonic and stimulating influence upon the intestines, reproductive and urinary organs and the nervous system. It is therefore useful in diseases characterized by want of tone or depression of the intestinal tract, the genito-urinary apparatus or the nervous system. It has been employed with advantage in impaired digestion or nervous dyspepsia, and in neurasthenia and sick headache it has given good results. It has also proved an excellent tonic in chronic respiratory affections, accompanied by cough and hypersecretion. In catarrh of the urinary surfaces it exerts a relieving influence, and in prostatorrhea its action is often corrective.

"It has no superior, if an equal, as a remedy to overcome the effects of sexual excesses. Under its influence we have seen a soft, tender testicle relieved of pain in a few days, and return to its accustomed size within a week. We believe that damiana is as likely, if not more likely, than saw palmetto to increase the size of the testicle and mammary gland. Damiana was originally introduced as an aphrodisiac, and to-day it is a constituent of many pills and compounds of this kind. Failure frequently follows their administration. Why? Partly because damiana is the indicated remedy in only a small per cent. of them —the *atonic* cases, the cases of functional impotency. The damiana patient is the one of atony; he looks as though he were just recovering from a long and serious illness. Damiana is no

more a specific for impotency than is iron, phosphorus, nux vomica, or saw palmetto. And we believe that, like them, it has no special or specific action upon the sexual organs, but that it affects them through its general tonic effect upon the whole body—its blood making powers. Plenty of good blood is the best cure for diseases of the nervous system. Plenty of good blood is the best cure for diseases of the respiratory system. (It will even cure phthisis pulmonalis.) Plenty of good blood will cure diseases of the genito-urinary or any other system of the body." (Bloyer.)

Turnera aphrodisiaca is tonic, stimulant, diuretic, and laxative.

Indications.—Iritation of the urinary mucous membranes; atonic conditions of the nervous system; constipation; atonic conditions of the genito-urinary system; catarrh of the urinary surfaces; chronic respiratory affections.

Dose.—Fluid extract, 5 to 60 drops; specific medicine, 5 to 60 drops.

Usual Prescription.—℞ Damiana, ℥i; water, ℨiv. M. Sig. Dose one teaspoonful every two hours.

Urtica Dioica —Common Nettle.

Urtica is employed in diseasees of the large intestine, with increased secretion, with gratifying results, and in passive hemorrhage from any part its restraining influence has been found very efficient. In jaundice and in some cases of rheumatism it has proved useful, and in some cases of goiter it has exerted a curative influence. Diarrhea, dysentery, cholera infantum, chronic inflammation of the bladder, and hemorrhoids are also among the pathological conditions which frequently present indications for this medicament.

Urtica dioica is astringent, diuretic, tonic and styptic.

Indications.— Profuse mucous discharges; urticaria, when the skin is elevated and attended by stinging and burning; passive hemorrhage from any part.

Dose.—Fluid extract, 1 to 10 drops; specific medicine, 1 to 10 drops.

Usual Prescription.—℞ Urtica, gtt. xxx to ℥i; water, ℨiv. M. Sig. Dose one teaspoonful every half hour to every two hours.

Ustilago Maidis—Corn Smut.

Ustilago stimulates the nervous supply of the female reproductive organs, and is employed with much advantage in menstrual and ovarian wrongs. In atonic conditions of the uterus, when the organ is pale, flabby or sub-involuted, and there is a tendency to hemorrhage, metrorrhagia, or a prolonged lochial discharge, it constitutes a most useful remedial agent, and in uterine catarrh it may well be included as a part of the treatment. The action of ustilago on the uterus is very powerful, but it is different from that of ergot. It causes regularly intermittent contractions. The contractions produced by ergot are tonic.

"In small doses—gtt. x to water ℥iv, a teaspoonful every one, two, or three hours—it may be used in capillary congestion, passive hemorrhages, enfeebled circulation to the brain, with dizziness, unsteadiness, dull headache (top of head), impaired vision, etc. It exerts a somewhat similar influence to ergot and may be used to increase the strength of the pains during labor. In the second or third dilution it may be employed to relieve false pains, and unpleasant sensations in the pelvic region, during the latter months of pregnancy." (Scudder.)

Ustilago maidis is uterine tonic and stimulant and promotes muscular contraction.

Indications.—Atony of the uterus, accompanied by menorrhagia, the blood being dark and forming stringy clots; profuse leucorrhea during intermenstrual periods; cervical and uterine enlargements; atony following labor; subinvolution of the uterus; impairment of the cerebral circulation, accompanied by dizziness, inability to command the voluntary muscles, or the activities of the brain; fibroid tumors and allied affections; spermatorrhea; psoriasis; eczema.

Dose.—Fluid extract, 1 to 20 drops; specific medicine, 1 to 20 drops.

Usual Prescription.—℞ Ustilago maidis, gtt. x to ℥i; water, ℥iv. M. Sig. Dose one teaspoonful every half hour to every three hours, as required by the indications.

Uva Ursi—Bearberry.

Bearberry exerts a direct influence upon relaxed conditions of the walls of the bladder, improving their tone and favoring normal contraction. It is employed as a stimulant and tonic

diuretic, and is indicated by an enfeebled circulation and innervation to the urinary apparatus. In diseases characterized by excessive discharges from the mucous membranes of the urinary organs it is an efficient remedy, and in ulceration of the walls of the bladder and in pyelitis it exerts a curative influence. Uva ursi also constitutes a useful medicament in the treatment of gonorrhea.

Uva ursi is astringent, diuretic, tonic and antilithic.

Indications.—Irritation of the renal, cystic and urethral surfaces; catarrhal conditions of the genito-urinary tract; excessive mucous discharges with the urine; lithic acid deposits in the urine; gonorrhea, accompanied by bloody and mucous discharges, and pain in the vesical region; intestinal catarrh; sense of weight and dragging down in the perineum (not dependent upon enlargement of the prostate).

Dose.—Fluid extract, 5 to 60 drops.

Usual Dose.—10 to 15 drops.

Valeriana Officinalis—Valerian.

Valerian is an excellent cerebral stimulant, and is employed with advantage in diseases resulting from enfeebled cerebral circulation. Its administration often affords great relief in the high tension common to many nervous states, and in wakefulness it exerts a sleep-producing power of much value. In hysteria and hypochondria benefit may be derived from its use, and in delirium tremens it often constitutes an important part of the treatment. If employed in conditions which frequently precede convulsions it will many times so far lessen nervous tension as to prevent the convulsive explosion. In the nervousness and depression frequently associated with flatulence valerian is a good remedy, and in spasmodic asthma, as well as in spasmodic coughs, it exerts a relieving influence. In fact, valerian may be employed with an assurance of good success in all wrongs of life in which a cerebral stimulant is needed.

"Valerian allays nervous irritability, modifies or arrests pain, promotes rest, and favors sleep, where these conditions result from an enfeebled cerebral circulation. It is very extensively used, and many times without benefit, as the condition of the nerve centers is very rarely taken into consideration.

"Its best use is in the treatment of chorea, associated with macrotys." (Scudder.)

Valeriana officinalis is stimulant, tonic, calmative and antispasmodic. In very large doses it causes mental excitement, giddiness, spasmodic movements and other unpleasant conditions.

Indications.—Nervous palpitation of the heart with dyspnea or cough; hysterical dyspepsia; temporal and frontal headache; coldness of the extremities; restlessness or sleeplessness.

Dose.—Fluid extract, 15 to 60 drops; specific medicine, 5 to 30 drops.

Usual Dose.—5 to 20 drops.

Verbascum Thapsus—Mullein.

Verbascum exerts a mild influence upon the nervous system, quieting irritation and promoting sleep. It also allays bronchial irritation and lessens cough.

An aromatic liquid, prepared from the bloom of mullein, and usually called mullein oil, is an efficient preparation. It is said that it will cure difficult hearing, especially in cases in which there is a feeling of fullness in the ears. In these cases three or four drops of the liquid should be placed in the ears three times a day.

Well packed in the ear on a pledget of cotton, it relieves the earache of children; and otorrhea is also benefited by the same treatment.

Verbascum thapsus is demulcent, diuretic, anodyne and antispasmodic.

Indications.—Irritable and catarrhal conditions of the pulmonary, intestinal and genito-urinary tracts; nocturnal enuresis; irritable states of the nervous system; sleeplessness.

Dose.—Fluid extract, 5 to 20 drops; specific medicine, 5 to 20 drops.

Usual Dose.—5 to 10 drops.

Verbena Hastata—Vervain.

It is frequently reported that verbena has cured cases of epilepsy which had been unsuccessfully treated for a long time by many other methods. These reports deserve attention, for it is possible that the remedy may reach a class of cases in which the physician now has but little success. Verbena relieves irritation of the stomach and intestinal canal, and promotes digestion and secretion.

"Putting my own cases alongside those of other observers, I am prepared to suggest the following tentative conclusions as my contribution to the therapy of verbena in epilepsy:

"1. Verbena is of great value in some cases of epilepsy, while in others it is of no value whatever, and may be even injurious.

"2. At the best, verbena is palliative rather than curative—not a remedy *for* epilepsy, but a remedy *in* some cases of epilepsy. None the less it is of value, and well worth further study.

"3. As to the indications for its use, I would suggest that it is of value chiefly in those cases which are characterized by cerebral anemia rather than congestion, and which consequently are not benefited by the bromides, but rather the reverse." (French.)

Verbena hastata is tonic, sudorific, expectorant and emetic.

Indications.—Epilepsy; obstructed menstruation; acute catarrhal conditions; intestinal irritation.

Dose.—Fluid extract, 10 to 60 drops.

Usual Dose.—10 to 30 drops.

Veratrum Album—White Hellebore.

White hellebore exerts a direct influence upon the pneumogastric nerve. In minute doses it has been employed with good success in intestinal diseases of a choleraic character, and in persistent vomiting it is a very efficient remedy.

Veratrum album is a vasomotor depressant. In large doses it is an irritant poison, causing severe vomiting, with profuse diarrhea. Even medium doses should be used with great caution.

Indications.—Persistent vomiting; large watery evacuations; coldness and blueness of the surface; sunken, pinched features; spasmodic, suffocative coughs and whooping-cough. This remedy is frequently indicated in cholera infantum.

Dose.—Fluid extract, 1 to 2 drops; specific medicine, 1-10 to 2 drops.

Usual Prescription.—℞ Veratrum album, gtt. x to xx; water, ℥iv. M. Sig. Dose one teaspoonful every hour to every four hours.

Veratrum Viride—American Hellebore.

Veratrum viride is among our most useful and most frequently employed remedial agents. In some respects its action is very similar to that of aconite. In large and medium doses, however, it markedly differs from the latter drug, as it is more apt to cause nausea and is a more powerful depressant to the

circulation, but depresses the respiration less than aconite. It also possesses feebler diuretic and diaphoretic properties than aconite. It is rapidly absorbed, and eliminated chiefly by the bowels. The symptoms of poisoning by veratrum are almost identical with those caused by aconite, except that the former drug may cause less anesthesia, and the treatment is the same as that prescribed for aconite poisoning.

Veratrum is often a much-needed remedy in spasmodic and convulsive diseases, pneumonia, erysipelas, rheumatism, and in the eruptive and malarial fevers. The leading specific indication —the full and bounding pulse—for its exhibition is so plain and simple that it cannot be mistaken. Whenever called for by this characteristic pulse, veratrum acts with a wonderful degree of certainty, and can always be relied upon as a means of calming an excited action of the heart, lessening the frequency of the pulse, controlling the temperature and subduing the fever. When indicated by the full and bounding pulse, it is the ideal sedative in inflammation of the respiratory organs or of the serous tissues. In pneumonia, pleurisy and peritonitis it is many times a most useful remedial agent, and it is also frequently needed in erysipelas and many other inflammatory conditions. In fact, it is indicated in all forms of disease, regardless of the name or location, where there is a quick, full and bounding pulse. In the early stage of typhoid fever, while the pulse is strong and full, veratrum will do much toward staying the inflammatory process and checking the force of these dangerous lesions. It is not a specific for any disease, but it possesses specific therapeutic properties in which great confidence can be placed whenever called for by a full and bounding pulse.

In febrile diseases the first noticeable effect of small doses of this medicament is a softening of the pulse, then the skin becomes soft and the pulse becomes less frequent and regular. When employed in the large doses necessary in puerperal convulsions the pulse at first sinks considerably, but as soon as vomiting occurs it comes back to the normal standard. I have used the drug for the third of a century in eclampsia, and believe it to be our most efficient remedy in this alarming condition. In this affection ten to fifteen drops of the specific medicine (or a good fluid extract) hypodermatically administered, constitutes an approved initial dose. In some cases it may be necessary to

repeat this large dose, but five drops, repeated as the severity of the case requires, will usually control convulsions after a single dose of ten or fifteen drops has been employed, and keep the pulse down to 60 per minute. A single dose of ten drops is more effective than several doses of five drops each. The necessary dose may be repeated every hour, or more frequently if the case demands it.

In intermittent and remittent fevers the specific indication is often met with. It is also to be seen in many cases of rheumatic fever, and under such circumstances it is our best antirheumatic, and will not only break the fever, but it will also arrest the excessive symptomatic sweats which arise from capillary congestion.

"We employ the veratrum to lessen the frequency of the heart's action. When properly used it not only lessens the frequency of the pulse, but it removes obstruction to the free circulation of the blood, and thus gives slowness, regularity, freedom and an equal circulation in all parts of the body. This action we call arterial sedation, though the name is not a good one.

"To obtain this action it is necessary that the remedy be used in small doses, frequently repeated, and that sufficient time be given to accomplish the object without disturbing function or producing depression.

"Veratrum is sedative in large doses, and its influence upon the heart may be speedily obtained in this way. But in this case its influence is depressing. It evidently causes slowness of the pulse by paralyzing the cardiac nerves. If the influence is continued there is impairment of the circulation, with tendency to congestion. As a general rule, the influence of large doses cannot be maintained; either the remedy produces irritation of the stomach, so that it will no longer be tolerated, or its depressing influence upon the circulation becomes so great that it must be suspended.

"In small doses the veratrum is a stimulant to all the vegetative processes. Acting through the sympathetic or ganglionic system of nerves, it removes obstruction to the capillary circulation, gives tone to the vascular system and strength to the heart. As the obstacles to a free circulation are removed, and the vessels through which the blood is distributed and returned regain their normal condition, there is less necessity for increased action upon the part of the heart; and as the power of the heart is increased, there is less necessity for frequent contraction.

"I give this as a theory of the action of veratrum, but whether true or not, there is no question with regard to the facts as above stated.

"Veratrum is the remedy for sthenia, where there is a frequent but free circulation. It is also the remedy where there is an active capillary circulation, both in fever and inflammation. A full and bounding pulse, a full and hard pulse, and a corded or wiry pulse, if associated with inflammation of serous tissues, calls for this remedy.

"As was remarked when describing aconite, the veratrum exerts a similar influence in acute inflammation, and directly controls the inflammatory process in its first stages. As a rule, the remedies that will cure fever will cure inflammation. To this I believe there are no exceptions, if a proper diagnosis is made, and we are governed by the same indications for prescribing. Aconite, veratrum, gelsemium, belladonna, nux vomica, quinine, and other direct remedies, may be prescribed with the same certainty in inflammation as in fever. There is the same necessity for securing a good condition of stomach and upper intestine for digestion, and giving proper food; the same necessity for securing normal waste and excretion, and having the tissues renewed from good blood. Pallid tongue calls for alkalies, the dark redness of mucous membranes for acids, the pasty white coat for the sulphites, etc.

"My experience teaches me that local inflammations are reached directly by this direct medication, and with a certainty a hundred times greater than by the old routine of internal and external counter-irritation. It makes no difference where its location, how great or how little, the treatment is exactly the same as for a fever presenting the same symptoms or indications for remedies.

"It must not be expected that the indications for remedies will be as pronounced in the case of inflammation as in fever, but they are always sufficient.

"I have treated inflammation of the lungs with veratrum alone, veratrum with gelsemium, veratrum with ipeeac, ipecac alone, aconite alone, with a success I never saw obtained from the use of nauseants and counter-irritation. Other cases required the use of the sulphites, of quinia, or the mineral acids. I am not alone in this experience, for scores of our more recent students, who have learned this practice in lectures, give testimony to its success.

"The local application of veratrum in the early stages of a superficial inflammation will not unfrequently arrest its progress. In this way we use it in erysipelas, in phlegmonous inflammation of cellular tissue, in felons, diseases of the bones, tonsillitis, etc.

"We employ veratrum in treating chronic disease for its stimulant influence upon the vegetative processes. Properly used, we find that it lessens the frequency of the pulse, giving a free and uniform circulation; it lessens the temperature; it increases

waste and excretion; and finally it stimulates digestion and nutrition.

"My friend, Prof. Howe, regards it as one of the most direct and certain 'alteratives' in the materia medica, and in this opinion he is suported by a large number of practitioners. If the remedy has the action above named, we can readily see how it favorably influences chronic disease, and how frequently it may be employed with advantage." (Scudder.)

"Veratrum is a remedy for active febrile and inflammatory diseases of the respiratory tract of the sthenic type. In these disorders it moderates the flow of blood, increases secretion, allays nervous irritation, brings down the temperature and subdues inflammation. The hard, full, bounding pulse is the guide here as elsewhere. Prof. Webster speaks of it as being specially indicated in the early stages of 'inflammation of the area of distribution of the bronchial arteries.' A gargle of veratrum is useful in *inflamed sore throat.* All *sthenic inflammations of the throat* are controlled by it. It is an excellent agent in *acute tonsillitis,* when indicated, and often painting the tincture alone upon the tonsils will check the disease. Very small amounts, however, should be used in this manner, and then only in the robust. Veratrum, when indicated by the full, bounding pulse, is an excellent sedative in *acute pneumonia* in the first stage, but only in markedly sthenic cases. The dose should be small and frequently repeated until the temperature and circulation respond, when the pain will be lessened, nervous excitation allayed, secretion re-established and cough controlled. It is equally of value in *pleurisy* (usually with bryonia), and in *acute bronchitis,* when specifically used. Veratrum is a valuable expectorant, and is of marked value in *chronic pulmonary affections,* to control the circulation, and thereby regulate the temperature, besides acting as a powerful and efficient alterative. In *phthisis,* especially in the early stage, it controls the violent circulation and temperature, facilitates expectoration, and exerts a beneficial influence over the sympathetic system, controlling restlessness and excitement and quieting cough. It is very frequently of service in *chronic bronchitis* and in *chronic pneumonia.* It is valuable in *hemoptysis,* when the circulation is strong and violent.

"When indicated, veratrum is a remedy of great power in *peritonitis,* especially *puerperal peritonitis* and *pelvic peritonitis* from septic absorption. Here the inflammation must be speedily checked and quite large doses may be required—two to ten drops of specific veratrum may be given every half-hour (if it does not provoke nausea), and continued until sedation is effected, when the remedy may be continued in fractional doses. Veratrum has won laurels in *peritoneal inflammations.* It is also a remedy of importance in properly selected cases of *nephritis, cystitis, hepatitis, ovaritis and orchitis.* For inflammations arising from blows

or kicks upon the abdomen, it is the best known remedy. It is often useful in active forms of *acute gonorrhea,* and may prevent *chordee,* and in *acute inflammatory rheumatism* it may be given to control pain and promote elimination. Veratrum has been justly praised as a remedy for *erysipelas.* It may be used both topically and internally. It is adapted to that form showing tumefaction and redness, simulating ordinary inflammations. It has been successfully used, internally and locally, for the relief of *poisoning by rhus toxicodendron. Boils, carbuncles, inflamed pimples, felons, ulcers, with heat* and tumefaction, *cellular inflammations* and *labial herpes* are well treated by painting specific veratrum upon them." (Felter).

Veratrum viride in medium doses is sedative, antispasmodic, resolvent, muscular relaxant and nervine. In large doses it is expectorant, emetic and cathartic. In very large doses it produces dangerous symptoms of a narcotic character.

Indications.—Full and frequent pulse; pulse full, strong and intense, the carotids pulsating forcibly, with cough, headache and weight in the epigastrium; full pulse, with such rapid action of the heart that sleep is prevented; convulsive conditions, when the pulse is full and indicates great vascular excitement; sthenic fevers and inflammations.

Dose.—Fluid extract, 1 to 3 drops; specific medicine, 1-10 to 3 drops. In convulsions the specific medicine may be given in doses of from 10 to 15 drops.

Usual Prescription.—℞ Veratrum viride, gtt. v to xx; water, ℥iv. M. Sig. Dose one teaspoonful every hour or two.

Vesicaria Communis—Bladder Plant.

Vesicaria exerts a specific influence upon the mucous tissues of the urinary tract, and has been employed in chronic cystitis with results which were promptly curative. In acute cystitis caused by exposure to severe cold and dampness it has proved equally valuable, and in gonorrheal cystitis it has been successfully employed. It is also deemed an efficient remedy in nocturnal enuresis.

Indications.—Acute and chronic cystitis, with or without a muco-purulent discharge; acute nephritis, with frequent desire to urinate or a scalding sensation; frequent and difficult voiding of urine; dribbling of urine in elderly persons; nocturnal enuresis.

Dose.—Tincture, 5 to 30 drops.

Usual Dose.—10 to 20 drops.

Viburnum Opulus—High Cranberry.

Viburnum is successfully employed as an antispasmodic in various abnormal conditions. It exerts a direct influence in controlling spinal irritation and spasmodic action arising from such irritation. It is used with marked advantage in dysmenorrhea and in many forms of cramp.

Viburnum opulus is antispasmodic, tonic and alterative.

Indications.—Cramps and spasms of all kinds, and especially cramps of the legs or other parts of females during pregnancy; spasmodic dysmenorrhea.

Dose.—Fluid extract, 5 to 60 drops, specific medicine, 5 to 30 drops.

Usual Dose.—10 to 20 drops.

Viburnum Prunifolium—Black Haw.

Black haw exerts a positive action of a soothing and quieting character upon the nervous system, and its judicious administration will promptly relieve many cases of nervous excitement. In nervous states when the patient complains of moderate pain, and restlessness is a prominent cause of suffering, it may well constitute a part of the treatment. Viburnum is a useful remedy in many wrongs of the reproductive organs, and is especially valuable as a means of lessening nervous excitement in abnormal conditions of the uterus. In dysmenorrhea, whether the flow is scant or profuse, it exerts a relieving influence, and it is especially needed in cases in which the discharge is membranous. Amenorrhea and menorrhagia also come within the curative range of black haw. It is also an excellent remedy in almost any form of ovarian irritation. Viburnum has long been employed as a remedy for habitual abortion, and with most satisfactory results. In order to get the most beneficial influence of the drug in these cases, small doses of the medicament should be given from soon after conception until the end of the fifth month of pregnancy. Cramps in the legs are promptly removed by administering ten drops of the specific medicine (or a good fluid extract), in a tablespoonful of water every three to six hours, for two or three days. If the annoying cramps return, the treatment should be repeated.

"It is claimed in the Southern States that the viburnum is a

specific against abortion. I have been told by several parties that it was a common practice among planters to make their slaves drink an infusion of viburnum daily whilst pregnant, to prevent abortion from taking the cotton-root. A physician from Texas assured me that, from an observation of fifteen years, he was confident that it exerted this influence, and that he had prescribed it in many cases without a failure.

"If it exerts this influence upon the uterus, as I am sure it does, it will prove a valuable remedy, not only as anti-abortive, but in diseases of the reproductive organs." (Scudder.)

"Viburnum is tonic and antispasmodic, well sustaining the time-honored meaning of such therapeutic terms. While a tonic to the gastro-intestinal tract and a good one, viburnum is better adapted to atonic conditions of the female reproductive tract, and as an agent for pain and weakness in female disease it has been most largely employed.

Viburnum is a fairly good agent to restrain abortion, and has been most successfully employed where the tendency to abort is habitual. It will not, however, prevent all cases from this accident. It is adapted to cases showing functional debility of the female reproductive organs, and should not be expected to prevent abortion due to syphilis or other inherited taints.

"As a uterine tonic it restores normal innervation, improves the circulation, and corrects faulty nutrition of the womb and ovaries. It is called for where the menstrual function is weak and painfully performed. Indeed, it is one of the best of agents for dysmenorrhea when due to debility In severe lumbar and bearing-down pelvic pains, and in uterine colic, so-called, it is a remedy of first importance. The keynote to its use is cramp-like or intermittent pains, with painful contraction of the pelvic muscles.

"It is a remedy for uterine bleeding in spasmodic dysmenorrhea with excessive flow, in menorrhagia, and in metrorrhagia of functional character. It finds a good field in the hemorrhages of the menopause. On the othert hand, its service in amenorrhea is grateful, being adapted to pale subjects apparently lacking in sufficient blood and subject to cramping pain. Nocturnal cramping in the muscles of the leg, not due to pregnancy, is quickly relieved by viburnum. It should be thought of in treating uterine subinvolution.

"As a uterine tonic during pregnancy it has earned a good reputation, and is not without value in after-pains, or to arrest leucorrhea; in debility of the menopause; and in chlorosis, chorea, and hysteria, all when due to uterine irritation. Briefly, viburnum is indicated by uterine irritability and hyperesthesia; in threatened abortion; dysmenorrhea with scanty menses; uterine colic; severe lumbar and bearing-down pelvic pains; intermittent,

painful contraction of the pelvic structures; cramping-like expulsive menstrual pains; after-pains; false pains of pregnancy; obstinate hiccough." (Felter.)

Viburnum prunifolium is tonic, astringent, diuretic, alterative and antispasmodic.

Indications.—Cramps of muscles; threatened abortion; painful menstruation, resulting from unnatural contraction of the pelvic muscles.

Dose.—Fluid extract, 5 to 30 drops, specific medicine, 5 to 30 drops.

Usual Dose.—10 to 20 drops.

Xanthium Strumarium—Broad-Bur Weed.

This agent has been employed with marked success in retention of urine, and in epistaxis it has checked the hemorrhage after many approved remedies had failed to do so. It is also an efficient styptic in other minor hemorrhages, and it is said to be an antidote for snake, spider and other poisonous bites.

Xanthium strumarium is diuretic and hemostatic.

Indications.—Passive hemorrhage of the bowels; epistaxis from purpura hemorrhagica; retention of urine; dysuria; strangury; scalding of urine or painful micturition; sensitiveness of the urethra and irritable bladder, with frequent discharge of urine; scalding or burning during micturition.

Dose.—Fluid extract, 10 to 60 drops.

Usual Dose.—15 to 30 drops.

Xanthoxylum Fraxineum—Prickly Ash.

Prickly ash is employed with benefit in all conditions requiring a diffusible stimulant which directly influences mucous surfaces. In states of relaxation and hypersecretion of mucous tissues it is a very efficient remedial agent.

"As a stimulant to mucous tissues it has no equal in the materia medica. Whenever it is desirable to obtain such influence, whether of the throat, the gastro-intestinal tract, the mucous membranes of the air passages, or of the urinary organs, we are rarely disappointed in its action. Upon the throat, the stomach, and upon the intestines, it exerts a topical influence before absorption.

"In small doses we occasionally employ it in chronic diseases of mucous surfaces with good results. The cases are as above,

when the mucous membranes are enfeebled and relaxed, with hypersecretion." (Scudder).

Xanthoxylum fraxineum is stimulant, tonic, diaphoretic and alterative.

Indications.—Relaxation and hypersecretion of mucous tissues; atonic conditions of the muscular, glandular and circulatory systems; atonic conditions of the digestive organs; flatulence and pain in the stomach and bowels; tympanites.

Dose.—Fluid extract, 5 to 30 drops, specific medicine, 5 to 30 drops.

Usual Dose.—5 to 10 drops, every hour to every three hours.

Zinci Chloridum—Zinc Chloride.

This is a most energetic caustic, and penetrates to deep-seated parts. Its application to the surface causes severe pain, which continues until the vitality of the part is destroyed, leaving a white eschar. Combined with an equal quantity of gum arabic, and moistened to the consistency of a paste, it is successfully used in the treatment of cancer. The combination is carefully applied, and crowded into every tissue of the growth, and reapplied in the same manner until the cancer is entirely removed. One part of the chloride of zinc dissolved in two parts of water makes a solution suitable for caustic purposes. As a disinfectant and deodorizer for cesspools, sinks, water-closets and drains, it is extensively used in about a 10 per cent. solution.

"In the proportion of one grain to water ℥iv, chloride of zinc is an excellent stimulant collyrium, and in the same proportion it may be used as an injection in chronic cystitis. In the proportion of one grain to the ounce it is an excellent wash in chronic vaginitis and diseases of the cervix uteri, in gonorrhea and gleet, and, with a spray apparatus, in chronic nasal catarrh.

"It is an excellent escharotic, and has been employed to destroy chancre and chancroid, epithelial growths and cancer. For this purpose it is usually combined with an equal proportion of gum arabic and water, until it has the consistence of a paste.

"In using this for the removal of malignant growths, its application must be most thorough, crowding this paste into every part, and persisting in the application until the diseased structure is wholly destroyed." (Scudder.)

Indications.—Locally as a caustic: schirrhous and cancerous growths; fistulous and scrofulous ulcers; fungous growths;

mother's mark, or nevi materni; fungous hematoids; syphilitic, cancerous or scrofulous ulcers; malignant growths.

Zinci Phenosulphonas—Zinc Phenosulphonate—Zinc Sulphocarbolate.

The sulphocarbolate of zinc combines the disinfectant properties of phenol with the astringent properties of the sulphate of zinc. A ¼ to ½ per cent. solution is of sufficient strength for local use.

Indications.—Typhoid and other conditions requiring an intestinal antiseptic. Locally: Gangrenous conditions; chronic gonorrhea, leucorrhea and gleet.

Dose.—¼ to 1 grain.

Zinci Sulphas—Zinc Sulphate.

Zinc sulphate is a remedy of varied usefulness, and is especially valuable as a local antiseptic. Its antiseptic action is believed to result from its astringent and stimulant influence upon the part to which it is applied. It serves to harden or condense the relaxed tissues, by which action the caliber of the vessels is diminished, and it thus restrains abnormal secretions or passive exudations. In stimulating the parts to which it is applied, it increases their power to resist decomposition.

Zinc sulphate has proved useful as an application in weeping eczema, pruritus and various ulcers, and as a wash in ophthalmia and conjunctivitis its action is corrective. As an injection in gonorrhea, leucorrhea, vulvitis and otitis, it is often of value. It is also used in gangrenous stomatitis, cancrum oris, and as a gargle in enlarged tonsils and relaxed sore throat it is many times curative. In nasal polypi the powder is insufflated, the solution being applied to the stump after removal of the polypus. Soft tumors near the vagina, anus and female urethra are often dried up by this agent. As a local antiseptic application, the sulphate of zinc is used in solution, from ʒj to ℥j to water Oj, according to the severity of the disease and the parts to which it is applied. To arrest gangrene of the extremities a strong solution is employed.

Zinc sulphate constitutes a very energetic emetic, and is especially valuable as a speedy emetic after the ingestion of poisons, irritating foods, narcotics, and in cases where the air-passages

are obstructed, as in croup and diphtheria. In chronic diarrhea and dysentery it is sometimes associated with other remedies.

"Sulphate of zinc is described as tonic, astringent, antispasmodic, emetic, expectorant, escharotic, antiseptic and discutient. We seldom employ it, however, except as a local application.

"In small and repeated doses it exerts an astringent action over the bowels, checks the secretion and produces constipation. It is supposed to exert a specific influence over the nervous system, remove spasmodic affections, cure intermittents, etc. It checks the secretions from both the pulmonary mucous membrane and that of the genito-urinary organs, as well as the bowels, by its astringent action, and hence its utility in catarrhal disorders of those parts. In full doses it acts as a powerful emetic, its action being speedy and unattended with the degree of nausea arising from most emetic agents. In very large doses 'it acts as an irritant poison, producing vomiting, purging, coldness of the extremities, and fluttering pulse.' Topically, it acts as a caustic, astringent and desiccant.

"As an emetic, sulphate of zinc is a prompt and successful agent, and is used mostly for this purpose to expel narcotic poisons. In cases of poisoning by these agents many esteem it superior to any other agent in use.

"As a topical astringent, its aqueous solution is much used as an application to bleeding surfaces; as a collyrium in chronic ophthalmia; as an injection in leucorrhea, chronic gonorrhea and gleet; as a gargle in ulcerated sore throat; as a wash to ulcers attended with a profuse discharge or loose and flabby granulations; as a lotion for chronic skin diseases; and as a remedy for nasal polypi. As an escharotic, the sulphate of zinc is one of the most important, being but little, and in many cases not in the least, inferior to the potassa fusa or sesquicarbonate of the same alkali. It is applied to old ulcers, chancres, exuberant granulations or fungoid growths, sarcomatous and schirrhous tumors, cancers, etc., as an escharotic or cauterant." (Scudder.)

Zinc sulphate in small doses is tonic, astringent and antispasmodic. In dose of from one-half scruple to one-half drachm it is an active emetic. In very large doses it is an irritant poison.

Indications.—Manifestations calling for a promptly-acting emetic. Locally: Lack of vital reaction in relaxed and catarrhal states of mucous surfaces; bleeding surfaces; chronic ophthalmia; leucorrhea; chronic gonorrhea and gleet; ulcerated sore throat; ulcers, attended with a profuse discharge or loose and flabby granulations; chronic skin diseases; nasal polypi; old ul-

cers; chancres; fungoid growths; sarcomatous and scirrhous tumors; cancer; gangrene.

Dose.—1 to 3 grains; as an emetic, 10 to 60 grains. Average emetic dose, 15 grains.

Zingiber Officinale—Ginger.

Ginger is a useful stimulant to the gastro-intestinal mucous surfaces. It is employed with advantage in relaxed and catarrhal conditions of these tissues.

Zingiber officinale is stimulant, sialagogue and errhine.

Indications.—Flatulence, caused by ingesta in a state of decomposition; relaxed states of the gastro-intestinal mucous surfaces; spasms of the stomach and intestines.

Dose.—Fluid extract, 5 to 20 drops; specific medicine, 5 to 20 drops.

Usual Dose.—10 to 15 drops.

INDEX.

Abdominal aorta, aneurism of, 291.
divisions, 290.
fullness, 79.
pain, twitch of, 80.
Acetic acid, dilute, 333.
Achilla millefolium, 333.
in atonic amenorrhea, 333.
in Bright's disease, 333.
Acidum aceticum dilutum, 333.
in carbolic acid poisoning, 334.
in uterine hemorrhage, 334.
benzoicum, 334.
in cystitis, 334.
in alkaline urine, 334.
boracicum, 334.
in burns and scalds, 335.
in ulcers and suppurating wounds, 335.
camphoricum, 335.
in night-sweats of consumptives, 335.
carbolicum, 651.
citricum, 335.
in scurvy, 335.
gallicum, 335.
in hemorrhage from mucous surfaces, 335.
hydrochloricum dilutum, 336.
in typhoid conditions, 336.
in deep-red tongue, 336.
nitricum dilutum, 336.
in diarrhea of children, 338.
phosphoricum dilutum, 338.
in states of depression, 339.
picricum, 339.
in superficial burns, 340.
salicylicum, 340.
in acute and chronic rheumatism, 340.
in pruritus, 341.
sulphuricum dilutum, 341.
in extreme prostration, 341.
in passive hemorrhage, 341.
sulphuricum aromaticum, 341.
in colliquative night-sweats, 341.
in diarrhea with great prostration, 341.
sulphurosum, 342.
in scarlet fever, 343.
tannicum, 344.
in exhaustive discharges, 344.
tartaricum, 344.
in fevers, 344.
Aconite, 345.
Aconitum napellus, 345.
in cholera infantum, 345.
in croup and tonsillitis, 345.
Actea alba, 349.
in chorea, 350.
in uterine diseases, 350.
Adonis vernalis, 350.
in irregular action of the heart, 351.
Ægle marmelos, 351.
in diarrhea, 351.
Æsculus glabra, 351.
in asthma, 352.
hippocastanum, 352.
in constriction of the pelvic viscera, 353.
Ætheris, 353.
in incarcerated hernia, 353.
in syncope, 354.
Afterbirth weed, 742.
Agaricus albus, 354.
in night-sweats of consumptives, 354.
Agnus castus, 354.
in atonic affections of the sexual organs, 355.
Agrimonia eupatoria, 355.
in diseases of the kidneys and bladder, 356.
Agrimony, 355.
Ague cake, 295.
Ailanthus glandulosa, 356.
in atonic conditions of the mucous membranes, 357.
in malignant scarlet fever, 356.
Albumin in urine and tests for, 235.
Aletris farinosa, 357.
in too frequent menstruation, 359.
Alnus rubra, 359.
in chronic skin diseases, 359.
Aloe, 360.
in hemorrhoids, 360.
Aloes, 360.
Alpinia officinarum, 360.
in dyspepsia, 361.
Alstonia constricta, 361.
in intermittent fever, 361.
scholaris, 361.
in malarial affections, 361.
Althæa officinalis, 362.

Althæa officinalis in diseases of the kidneys and bladder, 362.
Alum, 362.
Alumen, 362.
in passive hemorrhage, 362.
Ambrosia artemisiæfolia, 362.
in mucous fluxes, 363.
American calumbo, 544.
Greek valerian, 665.
hellebore, 755.
ivy, 367.
mistletoe, 652.
Ammonii acetatis, liquor, 363.
in intoxication, 363.
benzoas, 364.
in ammoniacal urine, 364.
bromidum, 365.
in epilepsy, 365.
carbonas, 365.
in chloroform narcosis, 365.
chloridum, 366.
in chronic pulmonary affections, 366.
Ampelopsis quinquefolia, 367.
in chronic cutaneous affections, 367.
Amygdalus persica, 367.
in acute gastritis, 367.
Amyl nitris, 369.
in epilepsy, 369.
in seasickness, 369.
Anacyclus pyrethrum, 370.
in neuralgia of the face, 370.
Anemia, 180.
cerebral, 67.
Anemopsis californica, 370.
in diarrhea and dysentery, 370.
Aneurism, 79.
aortic, 289.
of descending aorta, 289.
of abdominal aorta, 291.
Anhalonium Lewinii, 371.
in angina pectoris, 371.
Anthemis nobilis, 371.
in diarrhea of children, 374.
Antimonii et potassii tartras, 374.
in acute bronchitis, 374.
Aorta, abdominal, aneurism of, 291.
descending, aneurism of, 289.
Aortic aneurism, 289.
obstruction, 287.
regurgitation, 77.
Apis mellifica, 375.
in diseases of the bladder and urethra, 375.
Apocynum androsæfolium, 378.
in hepatic diseases, 378.
cannabinum, 378.
in edema of cellular tissue, 381.
Apomorphinæ hydrochloricum, 381.
in laryngeal croup, 383.
Apomorphine hydrochloride, 381.
Apoplectic conditions, 86.
Apoplexy, pulmonary, 275.
Appendicitis, sense of touch in, 131.
Aralia hispida, 383.
in irritation of the urinary organs, 384.
racemosa, 384.
in chronic pulmonary diseases, 384.
Arbor vitæ, 745.
Arcus senilis, 75.
Areca catechu, 385.
in intestinal worms, 385.
Aristolum, 386.
in parasitic eczema, 386.
Arnica montana, 386.
in strains and bruises, 386.
Aromatic sulphuric acid, 341.
spirits of ammonium, 366.
Arsenici iodidum, 389.
in scaly conditions of the skin, 389.
Arsenitis, liquor potassii, 389.
in chronic catarrh, 389.
Artemisa absinthium, 392.
in atonic dyspepsia, 392.
Arum triphyllum, 392.
in bronchitis and laryngitis, 392.
Asarum canadense, 393.
in pulmonary affections, 393.
Ascaris lumbricoides, 88.
Ascites, 294.
Asclepias curassavica, 393.
in capillary hemorrhage, 393.
incarnata, 394.
in catarrhal diseases, 394.
syriaca, 394.
in dropsical affections, 395.
tuberosa, 395.
in bronchitis and pleurisy, 395.
in enlargement of the heart, 398.
Aspidium filix-mas, 398.
in tapeworm, 398.
Aspidosperma quebracho, 398.
in bronchial catarrh and emphysema, 399.
Asthmatics, shoulders in, 79.
Ataxia, locomotor, 68.
Atheroma, 145.
Atheromatous changes in arterial walls, 78.
changes in gouty heart, 77.
Atony, 56.
diseases of, 88.
with increased mucous secretion, 57.
Atropæ sulphas, 399.
in night-sweats of phthisis, 400.
Atropine, 399.

Attitude of patient, 66.
Auri et sodii chloridum, 400.
in secondary and tertiary syphilis, 400.
Auscultation, 267.
Avena sativa, 400.
in nervous prostration, 400.

BAEL fruit, 351.
Balsam of Peru, 627.
tolu, 627.
Balmony, 462.
Baptisia tinctora, 403.
in typhoid conditions, 403.
Barberry, 418.
Barrii chloridum, 407.
in induration of glands, 407.
Barosma crenata, 407.
in diseases of the genito-urinary organs, 407.
Bayberry, 626.
Bearberry, 752.
Bearsfoot, 667.
Belladonna, 409.
in impairment of capillary circulation, 412.
in scarlet fever, 409.
Benzoate of ammonium, 364.
of lithium, 602.
Benzoin, 415.
Benzoinum, 415.
in chronic pulmonary diseases, 415.
Berberis aquifolium, 416.
in secondary and tertiary syphilis, 416.
vulgaris, 418.
in chronic diarrhea and dysentery, 419.
Betal nut, 385.
Bile, 162.
Birthroot, 749.
Bishop's weed, 456.
Bismuthi et ammonii citratis, 419.
in irritation of the stomach and bowels, 419.
subgallas, 419.
in gastric and intestinal inflammation, 420.
subnitras, 420.
in iritative diarrhea and vomiting, 420.
Bitter cucumber, 481.
root, 378.
Bittersweet, 730.
Black alder, 682.
haw, 761.
hellebore, 564.
Indian hemp, 378.
willow, 703.
Blackberry, 699.
Bladder plant, 760.
wrack, 545.
Blood, bad, evidence of, 183.
capillary circulation of, 187.
changes in, 182.
circulation, wrongs of, expressed in face, 88.
condition of as evidence of disease, 88.
defect in, 180.
determination of, 186.
in discharges, 209.
exudation shows character of, 182.
irregular distribution of, 186.
local lesions of its circulation, 186.
poor (spanemia), 181.
in typhoid conditions, 182.
wrongs in its circulation, 184.
Blood flower, 393.
root, 706.
Blue cohosh, 457.
flag, 583.
gum tree, 524.
Boletus, 354.
Boneset, 526.
Boracic acid, 334.
Borax, 719.
Bowels, discharges from, 179.
Box elder, 636.
Brain, atrophic irritation of, 87.
function of, 45.
functional activity of, 87.
inflammation of, 86.
nutrition of, 86.
softening of, 87.
Brayera anthelmintica, 422.
in intestinal worms, 422.
Bright's disease, 232.
Broadbur weed, 763.
Bromide of ammonium, 365.
calcium, 443.
lithium, 603.
potassium, 673.
sodium, 720.
strontium, 735.
Bromoform, 422.
in whooping-cough, 422.
Bronchial fremitus, 264.
Bronchiectasis, 270.
Bronchitis, chronic, 66, 274.
Broom, 496.
Bryonia alba, 423.
in diseases of the serous membranes, 423.
Buchu, 407.
Buckeye, 351.
Bugleweed, 608.
Burdock, 599.
Butternut, 586.

Cachexiae, 68.
Cactus grandiflorus, 427.
in diseases of the heart, 428.
Caffeinæ, 433.
in cardiac and renal dropsy, 433.
Calabar bean, 653.
Calcarea carbonica, 434.
in capillary bronchitis, 434.
fluorica, 436.
in gouty enlargement of the finger joints, 436.
phosphorica, 437.
in chorea and chlorosis, 439.
sulphurica, 441.
in purulent discharges from mucous membranes, 441.
Calcii bromidum, 443.
in chorea and hysteria, 443.
chloridum, 443.
in glandular enlargements, 444.
hypophosphis, 444.
in depression of nervous power, 444.
phosphas precipitata, 444.
in wasting diseases, 444.
sulphidum, 444.
in muco-purulent secretion, 446.
Calcined magnesium, 611.
Calcis, aqua, 442.
in acidity of the stomach, 443.
Calcium sulphate, 441.
Calendula officinalis, 446.
in impaired capillary circulation, 447.
Camphor, 447.
in depression of the nervous system, 447.
Camphoræ monobromata, 447.
in chorea and hysteria, 447.
Camphoric acid, 335.
Cancer of the lungs, 289.
vertebral, 72.
Cannabis indica, 448.
in diseases of the genito-urinary organs, 449.
Cantharis vesicatoria, 450.
in tenesmus of the neck of the bladder, 452.
Capillary circulation, impairment of, 96.
Capsella bursa pastoris, 452.
in diseases of the pelvic viscera, 452.
Capsicum annum, 453.
in delirium tremens, 453.
Carbonate of ammonium, 365.
Carbo-vegetabilis, 453.
in passive hemorrhage, 454.
Caries, 72.
Carium copticum, 456.
Carium copticum in alcoholism, 456.
Cascara amarga, 456.
in acute and chronic syphilis, 456.
Cascara sagrada, 693.
Castanea vesca, 456.
in spasmodic coughs, 457.
Castor oil, 642.
Catalpa bignonioides, 457.
in asthma and chronic bronchitis, 457.
Catarrh, laryngeal, 274.
Calumba, 585.
Canada fleabane, 520.
Caroba, 585.
Caulophyllum thalictroides, 457.
in uterine diseases, 457.
Cedron seed, 717.
Cells, epithelium, deficiency in number, 120.
Cerebellum, diseases of, 68.
Cerebro-spinal meningitis, 31.
Cerii oxalas, 459.
in vomiting of pregnancy, 459.
Chaste tree, 354.
Cheken, 524.
Chelidonium majus, 460.
in inflammation of the liver, 460.
Chelone glabra, 462.
in atonic states of the digestive organs, 462.
Chestnut, 456.
Chimaphilla umbelata, 462.
in diseases of the kidney and bladder, 462.
Chionanthus virginica, 463.
in diseases of the liver, 463.
Chloralum hydratum, 465.
in puerperal convulsions, 465.
Chloride of ammonium, 366.
barium, 407.
gold and sodium, 400.
lime, 443.
potassium, 587.
Chloroform, 466.
in convulsions, 466.
Cholera, Asiatic, 34.
Chorea, 66.
systolic murmur in, 287.
Cimicifuga racemosa, 467.
in diseases of women, 467.
Cinchona calisaya, 471.
in malarial and miasmatic diseases, 471.
Cinnamon, 472.
in post-partum hemorrhage, 472.
Circulation of the blood, wrongs in, 42.
Cirrhosis, visceral, 78.

Citrate of iron, 527.
Citric acid, 335.
Citrullus vulgaris, 474.
in deficient secretion of urine, 474.
Cleavers, 546.
Club moss, 607.
Coca, 523.
Cocaine, 475.
Cocilana, 561.
Cod-liver oil, 639.
Colchicum autumnale, 474.
in rheumatism and gout, 474.
Colic root, 360.
Collinsonia canadensis, 476.
in functional diseases of the heart, 476.
Colocynth, 481.
in colic and dysentery, 482.
Color in angina pectoris, 101.
apoplexy, 101.
asthenia, 98.
cholera, 98.
circulation, imperfect venous, 98.
cutaneous veins, 101.
determination of blood, 101.
diagnosis, 94.
diseases of women, 99.
gastro-intestinal diseases, 100.
intestinal diseases of children, 99.
local changes, 99.
measles, 97.
pneumonia, 97.
pregnancy, 99.
sepsis, 97.
smallpox, 97.
superficial disease, 102.
typhus fever, 97.
Common nettle, 751.
Congestion, causes of, 187.
Conium maculatum, 482.
in some forms of paralysis, 482.
Constipation, 178.
Contagious diseases and element, 31.
Continued fever, 45.
Convallaria majalis, 484.
in diseases of the heart and kidneys, 485.
Convulsions, causes of, 201.
Copper, 493.
Coptis trifolia, 485.
in diseases of the digestive organs, 485.
Corallorhiza odontorhiza, 485.
in acute pulmonic diseases, 486.
Corn silk, 733.
smut, 752.
Cornus Florida, 487.
in intermittent fever, 487.
Corydalis formosa, 487.
in atonic skin diseases, 487.
Cotton plant, 556.
Couch grass, 749.
Cranesbill, 551.
Cratægus oxyacantha, 488.
in diseases of the heart, 488.
Crawley, 485.
Creosotum, 491.
in pulmonary diseases, 492.
Creolinum, 492.
in suppurating and ichorous wounds, 492.
Crepitation, 272.
Crocus sativus, 492.
in suppression of the lochial discharges, 493.
Croton oil, 642.
Cubeb, 661.
Cupri, 493.
in persistent anemic conditions, 494.
Cutaneous pigment, 168.
Cypreus articulatus, 494.
in nausea and vomiting, 494.

DAMIANA, 750.
Dandelion, 743.
Datura stramonium, 496.
in acute delirium, 496.
Deadly nightshade, 409.
Degeneration, fatty, of the heart, 63.
Delphinium staphisagria, 498.
in diseases of the genito-urinary organs, 498.
Delirium in acute diseases, 195.
tremens, conditions of, 195.
Deposits, character of, 63.
Depression, 83.
Diagnosis, blood and its circulation in, 179.
color in, 94.
direct and by exclusion, 50, 171.
discharges in, 206.
educated sense of touch in, 129.
excess or defect in, 168.
innervation in, 194.
method of, 48.
nutrition in, 55.
obscure cases in, 318.
physical, 243.
from physiological standard, 49.
sense of hearing and touch in, 120.
sight in, 65.
smell in, 156.
urine in, 213.
Diathesis, 68.
arthritic, 69.
bilious, 70.

Diathesis, gouty, 69.
lymphatic, 71.
nervous, 70.
sanguine, 69.
strumous, 69.
Digestion, buccal, wrongs of, 55.
intestinal, wrongs of, 58.
stomach, wrongs of, 56.
Digitalis purpurea, 499.
in diseases of the heart, 500.
Dioscorea villosa, 501.
in spasmodic affections, 503.
Diphtheria, 31.
Discharges in diagnosis, 206.
from the bowels, 211.
from the mouth, 207.
from the nose, 206.
from the respiratory tract, 209.
from the stomach, 208.
tuberculous, 210.
Disease a method of life, 21.
Diseases of cerebrum, 93.
cerebellum, 93.
chronic, excess of temperature in, 53.
classification of, 28.
contagious, 31.
endemic, 35.
expressed in position, 91.
expressed by movement, 91.
expression of mouth in, 89.
falling forward of shoulders in, 93.
general and local, 39.
general symptoms of, 65.
of kidneys, 93.
local, position in, 84.
pelvic viscera, movements in, 92.
periodicity in, 36.
of sexual organs, contraction in, 90.
specific expression of, 8.
sporadic, 38.
structural, 87.
types of, 66.
walk in, 67.
zymotic, 32.
Dita bark, 361.
Dogwood, 487.
Dover's powder, 583.
Drosera rotundifolia, 505.
in irritative and explosive coughs, 505.
Dwarf elder, 383.

ECHINACEA angustifolia, 506.
in all stages of syphilis, 507.
Eclectic school of medicine, 5.
Edema, pulmonary, 272.
Elaterium, 512.
Elacterium in convulsions, 513.
Elder, 704.
Elecampane, 576.
Emotions, wrongs of, 45, 197.
Emphysema, 66.
chest in extensive, 79.
Endemic diseases, diagnosis of, 35.
influence, 35.
Endocardial and exendocardial murmur, 285.
Endocarditis, inflammatory, 287.
English chamomile, 371.
Enteritis, acute, 92.
Epidemic influence, 29.
Epigeæa repens, 513.
in diseases of the genito-urinary organs, 514.
Epilepsy, some causes of, 202.
Epilobium angustifolium, 514.
in diseases of intestinal mucous membranes, 514.
Epsom salt, 614.
Equisetum hyemale, 515.
in irritation of the urinary tract, 515.
Ergota, 516.
in capillary hemorrhage, 519.
Eriodictyon glutinosum, 520.
in diseases of the respiratory organs, 520.
Erigeron canadense, 520.
in passive hemorrhage, 522.
Eryngium aquaticum, 522.
in diseases of the urinary organs, 522.
Erysipelas, 31.
Erythroxylon coca, 523.
in hysteria and neurasthenia, 523.
Ether, 353.
Eucalyptus globulus, 524.
in pulmonary gangrene, 524.
Eugenia chequen, 524.
in purulent diseases of the bronchial tubes, 524.
Euonymus atropurpurens, 525.
in hepatic diseases, 525.
Eupatorium aromaticum, 525.
in chorea and hysteria, 525.
perfoliatum, 526.
in intermittent and remittent fevers, 526.
purpureum, 526.
in ovarian and uterine atony, 528.
Euphorbia corollata, 529.
in diarrhea of typhoid fever, 529.
hypericifolia, 529.
in diarrhea and dysentery, 529.
ipecacuanha, 530.

Euphorbia ipecacuanha in diseases of mucous surfaces, 530.
pilulifera, 531.
in bronchitis and asthma, 531.
officinalis, 531.
in acute coryza, 531.
Evening primrose, 630.
Examination of the pharynx and larynx, 253.
sick, 125.
thorax, 257.
Excess of blood may be cause of disease, 180.
defect and perversion in disease, 40.
Excitation, 41, 82, 164.
and depression, position in, 82.
Excretion and secretion, wrongs in, 42.
Excretory organs, relation of, 47.
Expiration, ratio of to inspiration, 269.
Expression, change of, 87.
in muscles in most common use, 82.
Exudations, fibrinous, 211.
Eye, observation of, 75.
Eyebrows in diagnosis, 74.
Eyelids, edema under, 74.
observation of, 75.
Eyebright, 531.

FACE, distorted by paralysis, 78.
expression of in health and disease, 72, 85.
flushed in determination of blood, 85.
hectic, of the, 72.
Hippocratic, 72.
in pain of childbirth, 83.
study of, 67.
False unicorn, 565.
Fatty inunction, 31.
Ferri, 533.
in zymotic diseases, 534.
chloridi, tinctura, 535.
in passive hemorrhage from the kidneys, 536.
citras, 537.
in chlorosis, 537.
iodidi, syrupus, 537.
in relaxed condition of the muscular system, 537.
oxidum hydratum, 537.
in arsenical poisoning, 538.
et ammonii citras, 538.
in anemia and irritation of the stomach, 538.
Ferrum phosphoricum, 539.
in acute fevers, 539.
Ferula sumbul, 541.
Ferula sumbul in conditions requiring a vital stimulant, 541.
Fever, arrest of, 149.
continued, 35, 45.
diurnal variations in temperature in, 52.
excess of temperature in, 52.
intermittent and remittent, 36.
yellow, 37.
Fluoride of lime, 434.
Flush of cheeks in respiratory diseases, 100.
cheeks in diseases of the sympathetic nervous system, 100.
left cheek, 100.
right cheek, 100.
Formaldehydi, liquor, 542.
in sores and wounds, 542.
Force, formative, 51.
Forehead, observation of, 73.
study of, 67.
Fowler's solution, 389.
Fragrant sumach, 695.
Frasera carolinensis, 544.
in chronic gastric catarrh, 544.
Fraxinus Americana, 545.
in enlargement of the spleen, 545.
Fremitus, bronchial, 264.
Friction sounds, 272.
Fringe tree, 463.
Fucus vesiculous, 545.
in diseases of the vascular system, 545.
Function, exercise of, 62.
Functional activity, 87.

GALANGOL, 360.
Gallic acid, 335.
Galium aparine, 546.
in suppression of urine, 546.
Gangrene, 192.
Garden marigold, 446.
sage, 703.
Gastric juice, 160.
excess of, 57.
Gaultheria procumbens, 546.
in chronic rheumatism, 547.
Gelsemium sempervirens, 548.
in irritation of the nerve centers, 548.
Gentiana lutea, 551.
in atony of the stomach, 551.
Geranium maculatum, 551.
in passive hemorrhage, 551.
German chamomile, 371.
Giant Solomon's seal, 666.
Ginger, 767.
Ginseng, 645.
Glonoin, 553.
Glycerinum, 552.

Glycerinum in acute and chronic vaginitis, 552.
Glycerylis nitratis, spiritus, 553.
in locomotor ataxia, 553.
Glyconda, 555.
in fermentative diarrhea, 555.
Golden seal, 567.
thread, 485.
Gossypium herbaceum, 556.
in diseases of the reproductive organs, 556.
Gravel root, 526.
Great celandine, 460.
plantain, 662.
Grindelia robusta, 557.
in catarrhal diseases, 557.
squarrosa, 557.
in malarial diseases, 557.
Growths, benign and malignant, 64.
partial diagnosis of, 64.
Guaiacol carbonate, 558.
Guaiacolis carbonas, 558.
in phthisis and typhoid fever, 558.
Guaiacum officinale, 559.
in syphilis and rheumatism, 559.
Guarana, 560.
in mental exhaustion, 560.
Guarea rusbyi, 561.
in broncho-pneumonia, 561.
Gums in lead poisoning, 77.

HAIR, attention of, 72.
diseases of, 84.
Haircap moss, 668.
Hamamelis virginica, 562.
in diseases of the nervous system, 562.
Hardy grindelia, 557.
Hawthorn, 488.
Heart, examination of, 280.
hypertrophy of, 281.
position of, 278.
systolic and diastolic sounds of, 278.
Heat, 52.
Hectic, face of the, 72.
Hedeoma pulegioides, 564.
in suppression of the lochia, 564.
Hedgehog cone flower, 506.
Helleborus niger, 564.
in hypochondria, 564.
Helonias dioica, 565.
in diseases of the reproductive organs, 565.
Hematemesis, 275.
Hematoxylon campechianum, 561.
in chronic diarrhea, 561.
Hemiplegia, 67, 203.
Hepatica Americana, 566.
Hepatica Americana in diseases of the mucous surfaces, 566.
High cranberry, 761.
Honduras bark, 456.
Honey bee, tincture of, 375.
Hops, 573.
Horehound, 618.
Horsechestnut, 352.
Horse nettle, 728.
Hydrangea arborescens, 566.
in diseases of the genito-urinary organs, 566.
Hydrastis canadensis, 567.
in debility of the digestive organs, 567.
Hydrated chloral, 465.
oxide of iron, 537.
Hydrogenii peroxidum, 570.
in cleansing requirements, 571.
Hydrocephalus, hand in, 79.
Hydronephrosis, 295.
Hydropneumothorax, 270.
Hyoscyamus niger, 571.
in diseases of the nervous system, 571.
Hyperemia, active and passive, 187.
intermediate, 86.
Hypericum perforatum, 573.
in diseases of the urinary passages, 573.
Hypertrophy of the left ventricle, 278.
right ventricle, 281.
Hypophosphite of lime, 444.
Humulus lupulus, 573.
in alcoholism, 573.

IDIOSYNCRASIES, 70.
Ignatia amara, 574.
in atony of the nervous system, 574.
bean, 574.
Indian hemp, 392.
(cannabis indica), 449.
tobacco, 604.
Inflammation, mammary, 194.
meningeal, 78.
symptoms of, 190.
Innervation in diagnosis, 194.
spinal, 44.
Insanity, acute, 196.
Inspiration, ratio of to expiration, 269.
Insufficiency of aortic valve, 288.
Intermittent fever, 35.
Intestinal glands, condition of, 170.
juice, 163.
functions of, 169.
Introduction, 5.
Inula helenium, 576.
in cutaneous diseases, 576.

Iodide of arsenic, 389.
Iodine, 577.
Iodum, 577.
in lead poisoning, 577.
Iodoform, 578.
in ill-conditioned wounds, 578.
Ipecacuanha, 579.
in passive hemorrhage of the stomach, 579.
et opii, 583.
in sleeplessness, 583.
Iris versicolor, 583.
in fullness of the throat and arteries, 583.
Iron, 533.
and ammonium citrate, 538.
Irritation, diseases of, 88.
and determination of blood, 92.
spinal, 44.

JACARANDA procera, 585.
in chronic skin diseases, 585.
Jalapa, 585.
in dropsical affections, 585.
Jaundice, 63.
Jeffersonia diphylla, 586.
in chronic skin diseases, 586.
Jeteorhize palmata, 585.
in diseases of the digestive organs, 585.
Juglans cinerea, 586.
in diarrhea and dysentery, 586.
Juice, gastric, excess of, 57.
deficiency of, 57.
intestinal, 163.
function of, 169.

KALI muriaticum, 587.
in edema of cellular tissue, 588.
phosphoricum, 591.
in various forms of paralysis, 592.
sulphuricum, 595.
in chronic catarrh, 596.
Kalmia latifolia, 598.
in secondary syphilis, 598.
Kava-kava, 661.
Kidneys, condition of, 176.
dislocation of, 295.
position of, 295.
Kosso or kousso, 422.

LABOR, constriction in, 130.
tissues thick in, 130.
Lappa officinalis, 599.
in diseases of the urinary organs, 599.
Large spotted spurge, 529.
Lavendula vera, 599.
in diseases of the nervous system, 599.
Lead poisoning, 79
Leontin, 459.
in amenorrhea and dysmenorrhea, 459.
Leopard's bane, 286.
Leptandra virginica, 600.
in diseases of the intestinal tract, 600.
Leukemia, 295.
Liatris spicata, 601.
in diseases of the kidneys and skin, 601.
Libradol, 601.
in inflammation and pain, 601.
Life root, 711.
Lilium tigrinum, 602.
in diseases of women, 602.
Lily of the valley, 484.
Lime water, 442.
Lips in diagnosis, 76.
Liquor bismuth, 419.
Lithasis, 66.
Lithii benzoas, 602.
in excess of uric acid, 602.
Lithii bromidum, 603.
in excessive mental activity, 603.
Lithii salicylas, 603.
in articular rheumatism, 603.
Lobelia inflata, 604.
in diphtheria and pneumonia, 604.
Local diseases, facial expression in, 89.
and general disease, 39.
Logwood, 561.
Liver, abscess of, 291.
cancer of, 293.
congestion of, 291.
contraction of, 294.
enlargement of, 291.
examination of, 291.
fatty, 293.
hydatid tumors of, 293.
yellow atrophy of, 294.
Liverwort, 566.
Lungwort, 732.
Lycopodium clavatum, 607.
in diseases of the genito-urinary organs, 608.
Lycopus virginicus, 608.
in passive hemorrhage, 609.

MACROTYS, 467.
Magnesii calcinata, 611.
in poisoning by acids, 611.
carbonas, 611.
in acidity of the stomach, 611.
phosphoricum, 611.
in spasmodic affections, 612.

Magnesia sulphas, 614.
in facial and other eruptions, 615.
Magnesium, calcined, 611.
carbonate, 611.
phosphate, 611.
sulphate, 614.
Malaria in disease, 43.
Male fern, 398.
Mandrake, 664.
Manganese sulphate, 615.
Mangani dioxidum precipitatum, 615.
in amenorrhea and dysmenorrhea, 615.
sulphas, 615.
in anemia and chlorosis, 615.
Mangifera indica, 616.
in passive hemorrhage, 616.
Mango, 616.
Mania, chronic, 196.
Marshmallow, 362.
Marubium vulgaris, 618.
Matico, 660.
Meadow saffron, 474.
Medication, restorative, 59.
Melilotus officinalis, 618.
in uterine congestion, 618.
Melancholia, 67.
Mental states, expression in, 85.
Menthol, 619.
in painful affections, 619.
Methylene blue, 620.
Methylthioninæ hydrochloricum, 620.
in cystitis and gonorrhea, 620.
Mitchella repens, 622.
in diseases of women, 622.
Monarda punctata, 623.
in nausea and vomiting, 623.
Morbus coxarius, 68.
movement in, 92.
Morphinæ sulphas, 624.
in painful conditions, 624.
Mouth, closure of evidence of determination, 91.
expression of as an indication for remedies, 89.
in prognosis, 91.
Movements in diseases of children, 94.
Mucous râles, 273.
Mucus, 163.
Muriate of iron, 535.
Muscale buttons, 371.
Muscles, diagnosis from twitching of, 94.
Muscular system, expression through, 80.
Mutisia vicicefolia, 626.
in spasmodic affections, 626.
Myrica cerifera, 626.
Myrica cerifera in diseases of mucous membranes, 626.
Myrospermum peruiferum, 627.
in chronic diarrhea and dysentery, 627.
toluiferum, 627.
in pulmonary affections, 627.
Myrrha, 627.
in bronchial catarrh, 627.

Natrium muriaticum, 628.
in glandular diseases, 628.
phosphoricum, 631.
in rheumatism, 631.
sulphuricum, 633.
in diseases always worse in damp weather, 633.
Nausea, 90.
Negundo aceroides, 636.
in hemorrhoids, 636.
Nepeta cataria, 636.
in flatulent colic, 636.
Nervous diseases, 67.
system, sympathetic, 44.
condition of, 87.
Neurosal affections, fingers in, 79.
Neutralizing cordial, 555.
Night-blooming cereus, 427.
Nitrate of silver, 385.
Nitric acid, dilute, 336.
Nitrite of amyl, 369.
Nitrous ether, spirit of, 731.
Normal life, 9.
Nose, in diagnosis, 76.
expression of, 89.
observation of, 76.
Nutrition, lesions of, 55, 67, 183.
Nux vomica, 739.

Oat, 400.
Œnanthe crocata, 637.
in epilepsy, 637.
Œnothera biennis, 639.
in intestinal irritation, 639.
Oleum morrhuæ, 639.
in anemic conditions, 639.
olivæ, 640.
in phthisis pulmonalis, 641.
ricini, 641.
in intestinal diseases, 641.
terebinthinæ, 642.
in intestinal hemorrhage, 642.
tiglii, 642.
in bronchial catarrh, 642.
Olive oil, 640.
Oil of turpentine, 642.
Opium, 643.
Osseous changes, 67.
Otorrhea, a cause of meningeal inflammation, 78.
chronic, 78.

Ovarian cysts, 294.
tumors, 294.
Ovaries, examination of, 297.
Oxalate of cerium, 459.
Oxydendrum aboreum, 645.
in cystic and prostatic diseases, 645.
Oyster shell, 434.

PAIN in abdomen, 90.
cause of, 165, 193.
expression of, 83, 90.
spots of, 71.
study of, 126.
twitch of, 72.
Palpation, 246, 264.
Panax quinquefolium, 645.
Pancreatic fluid, function of, 169.
Pancreatic juice, 162.
Pancreatinum, 646.
in atonic diseases of the stomach, 646.
Paralysis agitans, 66.
division of, 202.
facial, 78.
general, 67.
hysterical, 67.
Paraplegia, diagnosis of, 202.
Parsley, 650.
Partridge berry vine, 622.
Passiflora incarnata, 646.
in diseases of the nervous system, 647.
Passion flower, 646.
Patient's expression in bed, 81.
Peach, 367.
Pelvic viscera, wrongs of, 92.
Pennyroyal, 564.
Penthorum sedoides, 648.
in diseases of mucous membranes, 648.
Pepsinum, 648.
in gastro-intestinal diseases, 649.
Percussion, 243.
Pericarditis, 284.
Pericardium, effusion into the, 280.
Periodicity in disease, 35.
Peritonitis, facial expression in, 72.
Peroxide of hydrogen, 570.
Petroselinum sativum, 650.
in cystitis and nephritis, 650.
Phenol, 651.
Phenolis, 651.
in septic diseases, 651.
Phenyl salicylate, 652.
Phenylis salicylas, 652.
in duodenal catarrh, 652.
Phoradendron flavescens, 652.
in atonic diseases of the uterus, 652.
Phosphate of iron, 539.
lime, 437.
magnesium, 611.
potassium, 591.
sodium, 724.
Phosphoric acid, dilute, 338.
Phosphorus, 653.
in diseases of the genito-urinary organs, 653.
Phthisis, early indications of, 272.
pulmonalis, 41, 66.
Physostigma venenosum, 653.
in diseases of the brain and spine, 654.
Phytolacca decandra, 654.
in glandular diseases, 655.
Picric acid, 339.
Piles, 296.
Pilocarpinæ hydrochloridum, 657.
in chronic skin diseases, 657.
Pilocarpus, 658.
in chronic rheumatism, 658.
Piper angustifolium, 660.
in chronic diseases of the stomach, 660.
cubeba, 661.
in diseases of the mucous membranes, 661.
methysticum, 661.
in diseases of the genito-urinary organs, 661.
Pipsissewa, 462.
Plantago major, 662.
in nocturnal enuresis, 662.
Pleurisy, effusions in, 272.
root, 395.
Pneumonia, 272.
color in, 206.
globular sputa in, 210.
respiration in, 79.
stage of engorgement, 276.
Podophyllin, 663.
in diseases of the glandular system, 663.
Podophyllum peltatum, 664.
in hepatic diseases, 664.
Poison hemlock, 482.
oak, 697.
Poisoning, lead, 71.
Poke root, 654.
Polemonium reptans, 665.
in diseases of the respiratory organs, 665.
Polygala senega, 666.
in chronic bronchitis, 666.
Polygonatum multiflorum, 666.
in congestion of the liver and spleen, 666.
Polygonum punctatum, 667.
in amenorrhea due to atony, 667.

Polymnia uvedalia, 667.
in hypertrophy of the cervix uteri, 668.
Polytrichum juniperinum, 668.
Pomegranate, 688.
Papulus tremuloides, 669.
in intermittent and remittent fever, 669.
Potassii acetas, 670.
in dropsy following scarlet fever, 671.
bichromas, 671.
in pseudo-membranous croup, 671.
bicarbonas, 672.
in acidity of the stomach, 672.
bromidum, 673.
in excessive brain activity, 674.
chloras, 676.
in fetid lochial discharges, 677.
ferrocyanidum, 677.
in chronic diseases of women, 678.
hydroxidum, 679.
in ingrowing toe-nail, 679.
iodidum, 679.
in syphilis and enlarged glands, 679.
nitras, 680.
in neuralgia and rheumatism, 680.
permanganas, 680.
in morphine poisoning, 681.
et sodii tartras, 682.
in excessive secretion of uric acid, 682.
Potassium bicarbonate, 672.
bichromate, 671.
bromide, 673.
chlorate, 676.
chloride, 587.
ferrocyanide, 677.
hydroxide, 679.
iodide, 679.
nitrate, 680.
permanganate, 680.
phosphate, 591.
sulphate, 595.
Precipitated manganese dioxide, 615.
phosphate of lime, 444.
Predominant wrong in disease, 185.
Preface, 3.
Prickly ash, 763.
Prinos verticillatus, 682.
in diarrhea and dysentery, 682.
Progressive muscular atrophy, 68.
Prunus virginiana, 683.
in irritation of mucous membranes, 683.
Ptelea trifoliata, 649.
Ptelia trifoliata in diseases of the respiratory organs, 649.
Ptosis, 75.
Pulmonary syphiloma, 289.
Pulsatilla nigricans, 683.
in diseases of the nervous system, 683.
Pulse, character and meaning of, 141.
changes in character of, 186.
dicrotic, cause of, 278.
description of, 134.
differences in and meaning of, 143.
diseases severe in proportion to frequency of, 136.
dull, elastic stroke of, 138.
empty, 139.
feeling of, 139.
frequency of, 135.
increased, 184.
relation to temperature, 136.
relation to volume, 137.
and wrongs suggested by, 139.
full, 139.
oppressed, 138.
proportion to respiration, 136, 144.
both should be felt, 143.
sharp, 138.
slowness of, 185.
small and hard, 139.
small and soft, 139.
small and vibratile, 139.
touch of similar to touch of skin, 141.
in aneurism, 145.
in healthy adult, 276.
in infancy, 276.
in diseases of heart and blood-vessels, 277.
in aortic insufficiency, 277.
in hypertrophy, 277.
Punica granatum, 688.
in diarrhea and dysentery, 688.
Pus from mucous membranes, 210.
Pyemia, facial expression in, 72.
odor in, 158.

Quebracho, 398.
Queen of the meadow, 526.
Quercus alba, 688.
in diarrhea and dysentery, 688.
Quininæ sulphas, 689.
in malarial diseases, 689.

Rag weed, 362.
Rectum, cancer of, 295.
fissure of, 296.
Red clover, 748.
Remedies and their uses, 333.

Remittent fever, 35.
Resorcinum, 691.
in erysipelas, 691.
Respiration, abnormal, 79.
Cheyne-Stokes, 262.
bronchial, 269.
hurried and labored, 79.
influence of in disease, 44.
number per minute, 262.
ratio of to the pulse, 262.
variations of, 262.
Rest and unrest, 81.
Restlessness from atonicity of nerve centers, 92.
Rhamnus californica, 692.
in rheumatism and rheumatoid pain, 692.
purshiana, 693.
in constipation, 693.
Rheum palmatum, 694.
in irritation of the stomach, 694.
Rhonchus, or râle, crepitant, 272.
mucous, 271.
sibilant, 271.
sonorous, 271.
subcrepitant, 272.
submucous, 272.
Rhubarb, 694.
Rhus aromatica, 695.
in diabetes and hemorrhage, 695.
glabrum, 696.
in ulceration of the stomach, 696.
toxicodendron, 697.
in diseases of the nervous system, 697.
Rochelle salt, 682.
Rubus villosus, 699.
in diseases of the intestinal tract, 699.
Rules for avoiding dangerous combinations, 330.
increasing departure from health, 300.
Rumex crispus, 699.
in anemia with impaired digestion, 699.

Sabal serrulata, 700.
in catarrhal affections, 701.
Saffron, 492.
Salicylic acid, 304.
Salicinum, 702.
in diseases of the gastro-intestinal tract, 702.
Salix nigra, 703.
in sexual irritation, 703.
Saliva, 158, 207.
Salol, 652.
Salvia officinalis, 703.
in diseases of the mucous surfaces, 704.
Salicylate of lithium, 603.
Sambucus canadensis, 704.
in dropsical conditions, 704.
Sandalwood, 708.
Sanguinaria canadensis, 706.
in diseases of air passages, 706.
Santalum album, 708.
in diseases of the urinary organs, 708.
Santoninum, 709.
in intestinal worms, 709.
Sarracenia purpurea, 710.
in glandular diseases, 710.
Saw palmetto, 700.
Scale flower, 626.
Scaly grindelia, 557.
Scilla maritima, 713.
in bronchitis, 714.
Scouring rush, 515.
Scutellaria lateriflora, 714.
in diseases of the nervous system, 715.
Sebaceous secretion, defect in, 174.
function of, 171.
Secretion and excretion, wrongs of, 42.
a vital process, 164. 167.
in diagnosis, 158.
of cerumen, wrongs in, 171.
of tears, 171.
excrementitious, functions of and wrongs in, 172.
mucous, increased, 57.
Senecio aureus, 711.
in diseases of women, 711.
Senega, 666.
Sennæ, 712.
in flatulent colic, 712.
Sensations by use of special senses, 197.
Senses, cultivation of the, 15.
of hearing and touch, diagnosis by, 120.
Sense of sight, diagnosis by, 65.
of smell, diagnosis by, 156.
Serpentaria, 712.
in eruptive diseases, 712.
Seven barks, 566.
Shepherd's purse, 452.
Silicea, 715.
in carbuncles and boils, 716.
Silk weed, 394.
Simaba cedron, 717.
in bites of venomous serpents, 717.
Skin of face in diagnosis, 77.
parchment-looking, 78.
regulator of temperature, 53.

Skin, vascular conditions of, 77.
Skullcap, 714.
Snakeweed, 531.
Sodii benzoas, 718.
in infectious fevers, 718.
bicarbonas, 718.
in hyperacidity, 718.
boras, 719.
in aphthæ of the mouth, 720.
bromidum, 720.
in nervous excitement, 720.
chloridum, 721.
in shock and collapse, 721.
iodidum, 722.
in hypertrophy of glands, 723.
nitras, 723.
in chronic rheumatism, 723.
phenosulphonas, 723.
in typhoid conditions, 724.
phosphas, 724.
in impaired nutrition, 724.
salicylas, 725.
in rheumatism, 725.
succinatum, 725.
in catarrhal jaundice, 725.
sulphas, 726.
in constipation, 726.
sulphis, 726.
in zymotic diseases, 727.
Sodium benzoate, 718.
bicarbonate, 718.
borate, 719.
bromide, 720.
chloride, 721.
iodide, 722.
nitrate, 723.
phosphate, 724.
salicylate, 725.
succinate, 725.
sulphate, 726.
sulphite, 726.
sulphocarbolate, 723.
Solanum carolinense, 728.
in epilepsy, 728.
dulcamara, 730.
in cutaneous diseases, 730.
Sourwood, 645.
Spanish chamomile, 370.
fly, 450.
Specifics for conditions, not for diseases, 7.
Specific, meaning of, 300.
medication, theory and practice of, 299.
Sphygmograph, use of, 278.
Spikenard, 384.
Spinal innervation, lesions of, 200.
wrongs in, 44.
irritation, diagnosis of, 204.
Spiritus mendereri, 363.
ætheris nitrosi, 731.
Spleen, palpation of, 295.
in syphilis, 295.
Sporadic diseases, 38.
Spring adonis, 350.
Spurred rye, 516.
Sputa, examination of, 273.
Squill, 713.
Squirting cucumber, 512.
Stavesacre, 498.
Stethoscope, position of, 283.
Sticta pulmonaria, 732.
in diseases of the respiratory organs, 732.
Stigmata maidis, 733.
in inflammation of the bladder, 733.
Stillingia sylvatica, 733.
in diseases of the throat, 733.
Stomach, atonic, 308.
cancer of, 290.
examination of, 290.
irritation of, 307.
Stone root, 476.
St. John's wort, 573.
Strength of will, 197.
Stricture of intestine, 296.
rectum, 296.
Strontii bromidum, 735.
in diseases of the stomach, 735.
Strophanthus hispidas, 735.
in diseases of the heart, 735.
Strumous diathesis, 69.
Study of pain in childbirth, 83.
Strychninæ sulphas, 737.
in anæmia and chlorosis, 737.
Strychnos nux vomica, 739.
in diseases of the intestinal tract, 739.
Stylosanthis elatior, 742.
in irritability of the uterus, 742.
Subgallate of bismuth, 419.
Subnitrate of bismuth, 420.
Sulphate of atropine, 399.
Sulphide of calcium, 444.
Sulphomethanum, 742.
in sleeplessness of alcoholics, 742.
Sulphonal, 742.
Sulphuric acid, dilute, 341.
Sulphurous acid, 342.
Sundew, 505.
Suppuration, 192.
Swamp milkweed, 394.
Sweet spirit of nitre, 731.
Sympathetic innervation, want of, 88.
nervous system, conditions of, 44, 87.
wrongs of, 203.
Syphilis, 43.
copper-colored spots in, 74.
Syrup of iodide of iron, 527.

TAG elder, 359.
Tannin, 344.
Taraxicum officinalis, 743.
in diseases of the gastro-intestinal tract, 743.
Tartar emetic, 374.
Tartaric acid, 344.
Tela araneæ, 743.
in constant chilliness, 744.
Temperature, alterations in, 146.
a means of diagnosis, 148.
decrease and increase in, 147.
deficiency in, 54.
diurnal variations in, 52.
elevation of, 149.
excess of, 52.
expression of disease, the, 150.
factors in high range of, 52.
high, causes of, 154.
high range of, 53.
high, with wet skin, 155.
importance of, 146.
increase in proportion to frequency of pulse, 147.
inflammation in proportion to, 150.
normal, 146.
peculiarities in, 54.
range of, 148.
rapid rise in children, 155.
relation to pulse, 149.
unequal distribution of, 54, 153.
unusual, 55.
in acute fevers and inflammations, 148.
chronic diseases, 150.
collapse, 154.
convalescence, 148.
febricula, 151.
morbus coxarius, 141.
phthisis, 147, 151.
typhoid conditions, 148.
Therapeutics, the study of, 319.
Thorne apple, 496.
Thuja occidentalis, 745.
in hydrocele, 746.
Thymol, 747.
in septic conditions, 747.
Thyroid glard, enlargement of, 79.
Tiger lily, 692.
Tissue, cellular, condition of, 88.
hypertrophy of, 51.
waste of, 150.
Tongue, observation of, 107, 117.
raw or bare, 117.
study of, 117.
in acute diseases, 118.
in chronic diseases, 118.
in chancre, 120.
in diabetes, 117.
in dyspepsia, 118.
Tongue in facial paralysis, 117.
in hemiplegia, 117.
in pyemia, 117.
in protracted illness, 118.
in relapsing fever, 120.
in scarlet fever, 118.
in stomatitis, 120.
in typhoid fever, 117.
Touch in diseases of the nervous system, 131.
sense of as an aid in selecting remedies, 130.
Trailing arbutus, 513.
Trifolium pratense, 748.
in whooping cough, 748.
Trillium erectum, 749.
in hemorrhage from mucous surfaces, 749.
Triticum repens, 749.
in purulent cystitis, 750.
Tumors, mediastinal, 289.
Turkey corn, 487.
Turnera aphrodisiaca, 750.
in sexual excesses, 750.
Typhoid character, 37.
conditions, 72.
fever, 31, 34.
lesion, 41.
Typhus fever, 31, 35.

UABANO, 560.
Unicorn root, 357.
Upland sumach, 696.
Urinary abnormal constituents and their examination, 231.
abnormal deposits and their examination, 228.
calculi and concretions, 222, 239.
glands, construction of the, 214.
secretion, nervous mechanism of, 223.
tube casts, 242.
Urine in diagnosis, 213.
abnormal substances in, 221.
albumin in and testing for, 232, 235.
bile in, 232.
blood in, 231.
chemical composition of, 218.
coloring matters of, 220.
cystic acid in, 230.
examination of, 228.
excessive secretion of, 177.
inorganic salts in, 220.
leucin in, 230.
lithic acid in, 229.
mucus in, 231.
oxalate of lime in, 229.
pathology of, 227.
passage of to the bladder, 223.

Urine, phosphates in, 230.
pus in, 231.
quantity of, 216.
reaction of, 216, 234.
retention of elements of, 177.
specific gravity of, 216, 234.
secretion of the, 217.
sugar in and testing for, 235.
tyrosin in, 230.
urates in, 229.
uric acid in, 229.
Urtica dioica, 751.
in profuse mucous discharges, 751.
Ustilago maidis, 752.
in capillary congestion, 752.
Uterus, examination of, 296.
tumors of, 296.
in pregnancy, 297.
weight of, 297.
Uterine souffle, 298.
Uva ursi, 752.
in urinary diseases, 753.

VAGUS nerve, relation to the heart, 143.
Valeriana officinalis, 753.
in disease of the nervous system, 753.
Veins, cutaneous, in children, 101.
Venous circulation, imperfect, 98.
Verbascum thapsus, 754.
in bronchial catarrh, 754.
Verbena hastata, 754.
in epilepsy, 755.
Veratrum album, 755.
in spasmodic coughs, 755.
viride, 755.
in puerperal convulsions, 756.
Vervain, 754.
Vesicaria communis, 760.
in chronic cystitis, 760.
Viburnum opulus, 761.
in cramps and spasms, 761.
prunifolium, 761.
in diseases of women, 761.
Virginia snakeroot, 712.
stone crop, 648.
Visceral cirrhosis, wrinkled ear-lobe in, 78.
diseases, chronic, 204.
Vocal fremitus, 263.
Voice in abdominal distress, 122.
in cerebral irritation, 122.
in chronic bronchitis, 123.
in congestion, 122.
in coughs, 123.
in cri encephalique, 122.
in croupous cough, 123.
in diseases of respiratory organs, 123.
Voice, in feebleness of, 121.
in nervous irritation, 122.
in sickness, 121.
strength of, 121.
Vomiting, importance of, 209.

WAFER ash, 649.
Wahoo, 525.
Water dropwort, 637.
eryngo, 522.
pepper, 667.
Watermelon, 474.
White ash, 545.
cohosh, 349.
hellebore, 755.
oak, 683.
poplar, 669.
snakeroot, 525.
Whooping-cough, 31.
Wild cherry, 683.
ginger, 393.
indigo, 403.
ipecac, 530.
yam, 501.
Will, influence of, 46.
Willow herb, 514.
Wintergreen, 546.
Witch hazel, 562.
Wormwood, 392.
Wry-neck, 79.

XANTHIUM strumarium in passive hemorrhage of the bowels, 763.
Xanthoxylum fraxineum, 763.
in diseases of the mucous tissues, 763.

YELLOW dock, 699.
fever, 31, 35.
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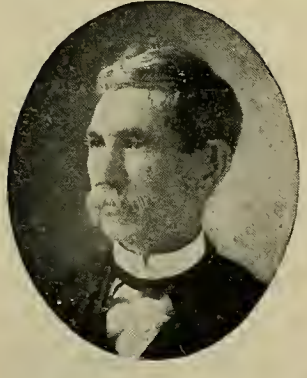

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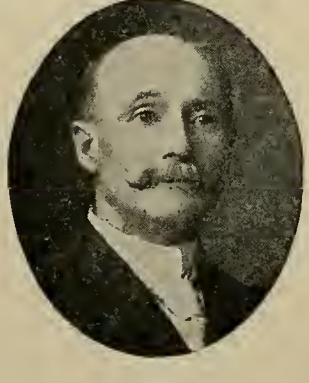

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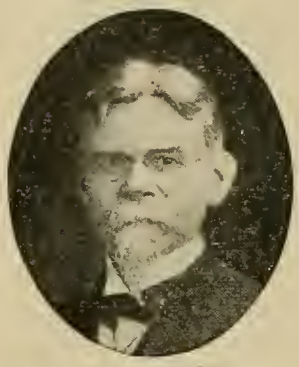

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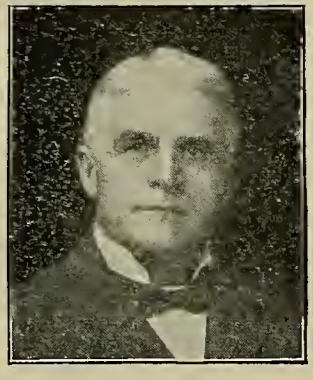

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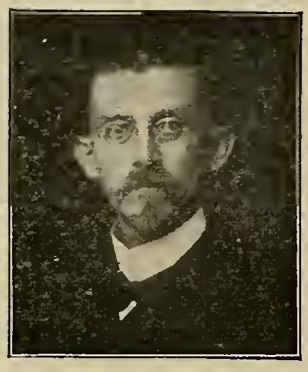

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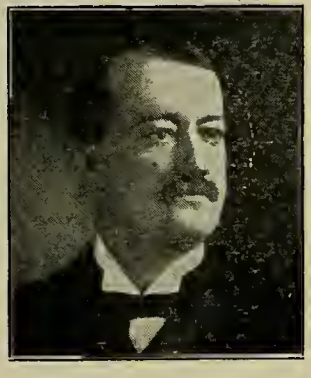

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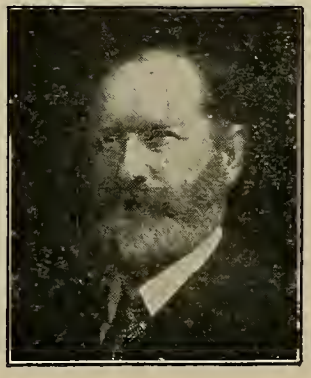

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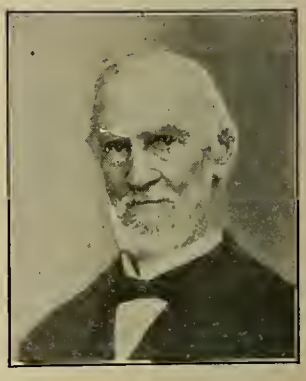

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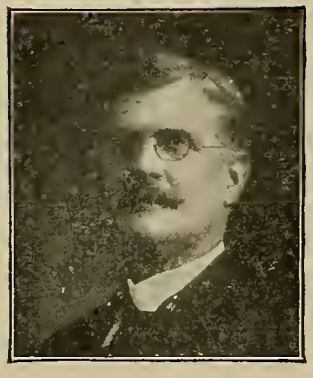

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